

DWR NEWS *People*

FALL 2009

Delta Habitat Conservation and Conveyance Program

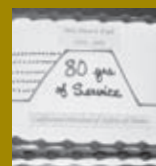
Supporting and Advancing Solutions
to the Delta's Challenges



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Going back almost four years now, Governor Arnold Schwarzenegger and DWR have tirelessly fought for a comprehensive plan to solve California's water crisis. Bond packages in 2007 and 2008 failed to make it to the ballot, but work continues to address statewide water issues, with particular focus on the Sacramento-San Joaquin Delta.

There is considerable momentum and attention at all levels of government and by the water community, business, agriculture and environmental organizations to resolving many of the state's longstanding water challenges.

Here in Sacramento, as we speak, there are ongoing, meaningful discussions for a comprehensive legislative package that will include long term conservation, Delta actions, and funding for statewide and regional water initiatives.

Three thousand miles away in Washington D.C., the federal government recently reaffirmed its commitment to these challenges, with top Obama Administration officials pledging to be "fully engaged in a coordinated response to California's water crisis."

What's spurring all of the current action? A complex set of problems that threatens our water supplies. California is in the third year of a serious drought, and needs to plan for long-term drought conditions. An ecological crisis in the Delta is further impacting how much water the state and federal water projects can supply to farms and communities. And aging infrastructure, a growing state population and climate change impacts to hydrology put more stress each year on our state's water systems.

Nowhere is state-federal-local collaboration more critical than in the Delta, which provides water to 25 million Californians as well as job-creating industries and millions of acres of farmland. Efforts are under way now to develop a plan to improve the overall ecological health of the Delta while ensuring more reliable water supplies.

In late September, DWR and Natural Resources Agency officials traveled to Washington D.C. to discuss strengthening the state-federal partnership on water issues. DWR Director Lester Snow joined with U.S. Interior Secretary Ken Salazar and Deputy Interior Secretary David Hayes to lead a public forum on California water issues. U.S. Senator

Dianne Feinstein and about a dozen other members of the California Congressional delegation also participated in the event, focusing high-level attention on the challenges facing the state and the needed solutions.

Two important actions took place that day. The first was Secretary Salazar announcing a new federal MOU and a Federal Bay Delta Leadership Committee to better coordinate federal participation in Delta matters. The MOU by six federal agencies re-establishes federal leadership on Delta issues, including active involvement in ongoing state efforts, such as the Bay Delta Conservation Plan (BDCP). The BDCP is an ambitious and collaborative effort that is moving forward to provide an assured water supply while restoring the environmental integrity of the Delta. The six-agency group will include high level representatives from the Departments of Commerce and Agriculture, White House Council of Environmental Quality, the Environmental Protection Agency, and the Army Corps of Engineers.

The second federal action came at the request of Senator Dianne Feinstein. The Interior and Commerce Departments have agreed to ask the National Academy of Sciences (NAS) to conduct additional scientific analyses of the Delta ecosystem and help identify whether there are scientifically defensible alternatives to current water management plans in California. Specifically, the NAS will independently review the Reasonable and Prudent Alternatives (RPAs) outlined in the U.S. Fish and Wildlife Service's Biological Opinion for Delta smelt and the National Marine Fisheries Service's Biological Opinion on salmon, steelhead and sturgeon.

These actions will further support the comprehensive approach that Governor Schwarzenegger has called for including the key elements of aggressive conservation, solutions in the Delta, more groundwater and surface storage, new infrastructure and a financing plan to pay for these vital investments.

More heated rhetoric and finger-pointing won't solve the enormous challenge we face. Instead, working together with this renewed federal and state partnership we can meet the challenges facing California's water system today and into the future.

Sue Sims, Chief Deputy Director
Department of Water Resources

Arnold Schwarzenegger
Governor

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Secretary for Natural Resources

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Delta Habitat Conservation and Conveyance Program

Supporting and Advancing Solutions to the Delta's Challenges

For more than a century, California's Sacramento-San Joaquin Delta has been and continues to be a valuable resource to millions of Californians. It has statewide importance for many reasons. More than 25 million Californians rely on the Delta for some or almost all of their drinking water. It is also an important agricultural epicenter, a diverse recreational spot, the largest estuary in the West, and home to numerous communities rich in culture and history.

At the same time, these varied uses of the Delta challenge the region with competing needs that also include flood protection and conservation. To further complicate matters, the Delta faces sea level rise, threats from potential earthquakes, continued land subsidence and flood flows.

Experts agree that today's Delta is fragile and requires careful management, as well as a long-term solution to these challenges if it is to remain sustainable for generations to come.



History

In 2006, Governor Schwarzenegger created the Delta Vision Blue Ribbon Task Force to address critical Delta-related issues. Based on the Task Force's findings, the Governor called for studies to assess potential habitat restoration and water supply conveyance options within the Delta. By 2008, the California Department of Water Resources (DWR) formed the Delta Habitat Conservation and Conveyance Program (DHCCP).

The DHCCP is a partnership between DWR and the U.S. Bureau of Reclamation (USBR) with funding and input from State and federal water contractors. The DHCCP will manage a number of activities to support the development of the Bay-Delta Conservation Plan (BDGP), which includes engineering, real estate services, identification of habitat restoration opportunity areas, and preliminary designs for water conveyance facilities.

DWR is the State lead and the Bureau is the federal lead for the Environmental Impact Statement/Environmental Impact Report (EIR/EIS) for the BDCP. Co-federal leads are the U.S. Fish and Wildlife Service and the National Marine Fisheries Service. For the EIR, the California Department of Fish and Game is a cooperating agency.

The BDCP process is developing a Habitat Conservation Plan (HCP) under the provisions of Section 10 of the Federal Endangered Species Act and a Natural Communities Conservation Plan (NCCP) under State Law. This is a complicated planning process that began in the fall of 2007 with the signing of a formal Planning Agreement by nearly 20 interested parties who are now members of a Steering Committee that is developing the BDCP. A draft of the Conservation strategy was developed in late July 2009 for review by the Steering Committee. It is posted on the Internet under the Natural Resources Agency Web site for BDCP.

The BDCP is currently searching for solutions to habitat restoration and water supply challenges, both for the people who reside in the Delta, and for the millions of people and businesses that rely on its water supply. The BDCP strives to improve the reliability of the Delta's water supply system for Californians while conserving threatened and endangered species in the Delta. Any proposed BDCP actions will be thoroughly evaluated (as per federal and state laws) by the DHCCP team.

Since its inception, the DHCCP has been actively engaged in moving toward the goal of meeting some of California's most important water challenges. **Richard Sanchez**, the Chief of the Division of Engineering (DOE) and DHCCP's Executive Manager, has more than 31 years of experience managing water resources and understands the Delta's importance to California. In June 2008, Sanchez assembled a team of more than 200 DWR employees and consultants including Washington-URS, HDR, CH2M Hill, and others, to analyze potential solutions to the Delta's water supply and habitat restoration issues.

"We are here to address the challenges and find solutions to the complex Delta issues that are impacting the entire state," said Sanchez. "Our responsibility is, first and foremost, to the people of California. The combined impacts of prolonged drought, degrading Delta environment, regulatory restrictions on water exports, seismic and flood risks to water supply reliability, and climate change have created an immediate need for interim and long-term solutions."

"We are here to address the challenges and find solutions to the complex Delta issues that are impacting the entire state. Our responsibility is, first and foremost, to the people of California."

Richard Sanchez

*Chief of the Division of Engineering (DOE)
and DHCCP's Executive Manager*



“The Delta is home to hundreds of aquatic and terrestrial species, a number of which are threatened or endangered and whose natural habitats have significantly changed over time.”

Restoring the Delta Ecosystem

The Delta is home to hundreds of aquatic and terrestrial species, a number of which are threatened or endangered and whose natural habitats have significantly changed over time. The DHCCP is evaluating potential habitat restoration areas identified by the BDCP.

Potential habitat restoration options under consideration include:

- Floodplain restoration that inundates suitable floodplain habitat during winter and spring for fish-rearing habitat and food base production
- Intertidal marsh restoration that improves brackish and freshwater intertidal marshes
- Channel margin habitat restoration that returns suitable sites along levee watersides to a more natural condition for increased food production, rearing habitat, improved water temperature conditions, and movement corridors for fish
- Riparian habitat restoration that establishes native vegetation near channels, rivers and streams
- Shallow sub-tidal habitat restoration that improves shallow tidal habitats

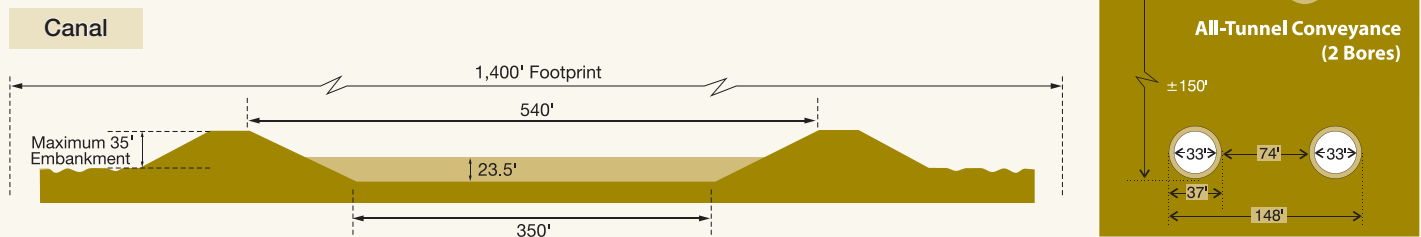
Aquatic species to be addressed by the BDCP and evaluated by the DHCCP include:

- Delta smelt
- Longfin smelt
- Winter-run Chinook salmon
- Spring-run Chinook salmon
- Fall-run and late fall-run Chinook salmon
- Central Valley steelhead
- Green sturgeon
- White sturgeon
- Sacramento splittail
- Pacific and river lamprey

The BDCP and DHCCP will also address terrestrial and semi-aquatic species, such as giant garter snake. More information about habitat restoration opportunity areas will be available by the end of 2009.

(Photo Above by Eric Hansen) The giant garter snake is a federally and state threatened species that historically occurred throughout the marshlands of the Central Valley. Due to loss of habitat, the species is now very rare in most of its former range, including the Delta where its distribution is currently unknown. Since May 4, 2009, giant garter snake studies have been performed daily in the Delta. **(Background photo)** Example of Habitat Restoration Area.

Proposed Water Conveyance Facility Conceptual Design Dimensions



Improving Water Supply Reliability

The DHCCP is reviewing a number of options for potential water conveyance facilities aimed at helping solve California's water supply reliability issues in the Delta. Potential solutions under consideration include constructing a possible water conveyance facility that would move Sacramento River water around the Delta to reduce impacts on the Delta's sensitive species and their habitats.

Conceptual options under consideration include:

- An eastern isolated conveyance system around the Delta
- A western isolated conveyance system around the Delta
- A through-Delta option that takes water through the Delta using existing channels via retrofitted and/or setback levees
- A dual conveyance option that might include components of either the eastern or western alignment, combined with some components of the through-Delta solution
- An all-tunnel option that would convey water in tunnels

These conceptual water conveyance options match existing water pumping capacities of up to 15,000 cubic feet per second to allow maximum water flows during wet seasons.

Water intake options that transfer water to conveyance facilities are also under consideration. Potential locations for intake facilities range from south Sacramento to Hood. Intake design features may include screens like the ones described at right.

On-Bank Cylindrical Screen

An on-bank cylindrical screen features conduits leading to a canal and a 1,400-foot-long fish screen facility to protect fish and meet regulatory requirements.

On-Bank Screen

An on-bank screen features screens directly on the river bank with conduits leading to the canal. It also features a 1,400-foot-long fish screen facility to protect fish and meet regulatory requirements.

In-River Screen

An in-river screen offers more screen surface in the river at a depth of 25 feet. The screen wraps around the entire intake structure. It also has a 500-foot-long fish screen facility to protect fish and meet regulatory requirements.

Timeline

The draft EIR/EIS documents for the BDCP are being developed now and will be released to the public for comment by the end of 2009 or early in 2010. After this public comment period ends, these environmental review documents will be revised based on those comments and released again for a final public comment period.

In-river intake option.





Public Involvement Activities

Ten preliminary scoping meetings were held in 2008 throughout the state, and another 12 scoping meetings were held in various regions throughout the state in March 2009. These scoping meetings were held to discuss conceptual options under consideration and receive public comment. Comments from scoping meetings can be found online at <http://www.baydeltaconservationplan.com/BDCPPages/scoping.aspx>. These comments will also be addressed in the EIR/EIS documents, which will be available for further public comment in 2010.

"The public has remained very engaged in the EIR/EIS process," said **Delores Brown**, Environmental Services Manager for the DHCCP. "Nearly 700 people from across California attended the 2009 scoping meetings. A wide range of comments were received and will be addressed in the EIR/EIS documents."

Milestones by Team

The DHCCP team has accomplished a number of important program tasks in the past year. DWR land agents have worked diligently to obtain a number of signed temporary entry permits

(TEPs) for entry onto public and private parcels within the five Delta counties. Eight landowner meetings were held in 2008 to explain the TEP process to landowners and answer questions about DHCCP's environmental review of the BDCP. **Allan Davis**, DOE's Real Estate Supervisor for DHCCP, leads the effort to obtain TEPs.

"Although faced with many challenges, we have worked one-on-one with approximately 300 landowners to answer questions, tailor language to individual needs, and determine what works best for specific parcels," said Davis. "I'm proud of our team and the work they have accomplished on this controversial and politically sensitive program."

Signed TEPs allow field crews from DWR, Department of Fish and Game (DFG), and consultants to conduct environmental and biological surveys, which includes cultural resources, recreation, and site assessments, to collect information to support environmental analysis of possible alternatives.

"The field crews have conducted both on-ground and in-water surveys for sensitive plants, vernal pool species, birds, bats, riparian mammals, amphibians, and reptiles such as the giant garter snake," said **Stephani Spaar**, Environmental Surveys Manager for the DHCCP. "The survey leads, field teams, and survey support staff have done an incredible job getting the environmental survey program out the door and into the Delta this year, despite rigorous schedules and a few safety concerns. The data collected will be important in helping with the EIR/EIS analysis."

Teams have also been established to evaluate a number of restoration opportunity area (ROA) options. These ROA teams are analyzing potential areas of the Delta for habitat restoration.

In addition to environmental survey data, subsurface information is required for conceptual design in support of the environ-



(Above) Left to Right: DHCCP Environmental Services Manager Delores Brown at right reviews documents with U.S. Bureau of Reclamation's Managers Susan Fry and Patti Idlof. DHCCP's Assistant Executive Manager and Project Manager for Engineering Teresa Engstrom speaks about the program's organization and integrated engineering efforts at a DOE staff meeting. Paul Marshall, DHCCP's Project Manager for Operations and Water Rights, speaks with landowners during an EIR/EIS scoping meeting.

(At Left) Director Snow speaks to Delta stakeholders at a public meeting in Clarksburg.



mental impact analysis. **Mark Pagenkopp**, DOE's Delta Geology Specialist, is overseeing the drilling and cone penetration testing at more than 200 locations in the Delta that began in May 2009 and will continue throughout the year along all the potential intake locations, conveyance alignments, and restoration areas.

Many DWR employees are contributing significantly to the DHCCP efforts. Among them are Principal Engineer **Paul Marshall**, who leads the teams doing the modeling, water quality and water rights work, and **Michelle Morrow** and **Karin Shine** with DWR's Legal Office, who ensure that DWR complies with applicable laws and regulations. **Teresa Engstrom**, Chief of DOE's Delta Engineering Branch, is the DHCCP Assistant Executive Manager and DOE's Project Manager. This position includes coordinating real estate services, surveying, engineering, and operational planning of DHCCP. She is also the contract manager for two of the three main DHCCP consulting contracts.

"Special thanks to DWR's divisions of Engineering, Bay-Delta Office, Environmental Services, and Legal for all of their work on the DHCCP," said Sanchez. "Other participating divisions include the State Water Project Analysis Office, Operations and Maintenance, Flood Management, and Management Services."

More than 100 public meetings have been held throughout California — both one-on-one with interested organizations, or as part of a larger forum — to discuss the BDCP and DHCCP's supporting environmental review process. In fact, every other week, the BDCP Steering Committee meets in a public forum to discuss a conservation strategy that will ultimately be evaluated by the DHCCP via the environmental review process.

The Delta is the largest and most unique estuary on the West Coast of both North and South America, and the DHCCP is working diligently to address problems in the Delta that simply cannot be ignored any longer. The fragile Delta is under tremendous pressure and long-term solutions, that meet the needs of both the Delta's ecosystems and California residents, must be identified to help sustain and protect this vital state resource.

For more information, visit:

<http://baydeltaconservationplan.com> ■

(Above) DHCCP team participants are from DWR's Divisions of Engineering, Environmental Services, Operations and Maintenance, Office of the Chief Counsel, State Water Project Analysis Office, Bay-Delta Office, State Water Project Power and Risk Office, Public Affairs Office along with the U.S. Bureau of Reclamation, State and Federal Water Contractors, and consultants. (Not all participants are in photo.)

(Below) Drillers taking soil core samples at McCormack-Williamson Tract. (Inset) DWR Engineering Geologist Dave Perry logging drill hole information.





Smoothing the Path for Salmon

Non-Physical Barrier Installed at Head of Old River

Designed to keep juvenile Chinook salmon and steelhead on course as they migrate to the Pacific Ocean, a Non-Physical Barrier (NPB) was installed in 2009 at the confluence of Old River and the San Joaquin River near Lathrop.

“This NPB, also known as a ‘bubble curtain,’ became a field experimental project to provide an alternative to a rock barrier used in the past,” said **Mark Holderman**, Chief of DWR’s Temporary Barriers Project. “The whole idea was to do a field test in the Delta. Let’s try this and see if it works in the field like it does in the laboratories in Denver where they have been studied by the U.S. Bureau of Reclamation. This non-physical barrier has been shown to work in Europe. If it works here in our Delta for the fish here, then it could have applications in the

future not only in this location but other places in the Delta to help guide fish behavior.”

By combining a strobe-lit curtain of bubbles and low-frequency sound generators to create an underwater wall of light and sound, the NPB deters juvenile salmon (smolts) from entering Old River and guides them on a more direct path down the San Joaquin River and to the Pacific Ocean. If the fish swim down Old River, they would be less likely to survive the presence of many agriculture diversions, as well the intakes of State and federal pumping plants. Studies from the Vernalis Adaptive Management Program (VAMP) have shown that salmon that stay in the main stem of the San Joaquin River have a shorter



migration path to the ocean and survive better than those that take a longer path through Old River.

“Preliminary results show the program succeeded in increasing the number of fish staying in the San Joaquin River and continuing their out-migration to the San Francisco Bay and the Pacific Ocean,” said Mark.

History of Fish Barriers Program

The South Delta Temporary Barriers Program (TBP), created in 1991, consists of the seasonal installation of four rock barriers (three are flow-control and one fish-control). The fish-control barrier, known as the Head of the Old River Barrier (HORB), is installed in the spring and fall.

The HORB is a combination of rock placed in the main channel bed along with overflow weirs and gated culverts. From April 15 to May 15, the spring HORB is normally installed at the confluence of the San Joaquin River and Old River and blocks most flow from the San Joaquin River into Old River. This physical barrier keeps fish out of Old River, improving out-migrating conditions for juvenile Chinook salmon.


The idea is to keep the fish swimming in the San Joaquin River toward the ocean, rather than straying into the predator-infested maze of the South Delta.

“The South Delta is a more complex network of channels. If we keep them in the San Joaquin, we believe they have a better chance of becoming adult salmon,” said Mark.

In response to a U.S. Fish and Wildlife Service Biological Opinion on Delta Smelt issued in December 2008, participants in the Vernalis Adaptive Management Plan (VAMP) experiment suggested testing a non-physical barrier as an alternative to the rock barrier – a barrier that may have adverse hydrodynamic impacts on the smelt.

DWR experts researched information about NPBs used in Europe to guide fish away from power plants and water treatment plant intakes. At the same time, the U.S. Bureau of Reclamation was performing laboratory studies on NPB technology in Denver.

“Our NPB barrier was much larger than most other applications out there,” said Mark. “The environment was also different. We were in a river environment where flows vary compared to other locations, where intake channels and pumps kept flows controlled. The geometry of the river was also different.”



“The bubble curtain essentially acts as a medium for carrying the sound and the lights. The fish see it as a solid ‘wall’ of light and sound.”

Mark Holderman


Chief of DWR's Temporary Barriers Project

Project Specifications

Unlike past NPB's where acoustics were sole elements of the barriers, the NPB today consists of three elements – acoustics, strobe lights and a bubble curtain – working together to act as a repellent to fish.

The sound system and strobe light flash rate can be tuned to known sensitivities of various fish species. Studies indicated that salmon respond to the NPB by choosing a pathway other than the one leading to the source of sound. This would result in the NPB deterring salmon from entering Old River.

“A lot of people think the bubbles are what scare the fish away and they are not,” said Mark. “The bubble curtain is really just a visual clue to the fish about where the sound is coming from. The sound propagates up the bubble curtain, while light reflects off the bubbles. The bubble curtain essentially acts as a medium for carrying the sound and the lights. The fish see it as a solid “wall” of light and sound. That's what really scares them away.”



“The timing and the cooperation all fell into place. Problems with any one of those things could have derailed the whole project. It was really very risky. We were very lucky. It wasn’t my doing or anybody else’s that magically made this happen. It was everyone feverishly working together and we just didn’t run into any major stumbling blocks.”

Mark Holderman, Chief of DWR’s Temporary Barriers Project

Timeline and Design

The NPB – in place from April to May – was suspended just above the channel bottom from four steel piles. Unlike the rock barrier, the NPB does not change the hydrodynamics of the rivers, so it has little adverse impact on fish. And since the NPB does not block the river channel, navigation is not impacted.

DWR’s Bay-Delta Office (BDO) and Division of Engineering (DOE) researched fishery studies and technical journals to determine if companies could provide NPB installation and technical support.

“Through this initial investigation of the technology and its application for our purposes, it looked like it might be promising,” Mark said. “We quickly further developed the concept by looking into the costs and logistics of meeting a very short schedule. We basically were handed this at end of January and had until the middle of April to get it installed.”

Early in March, the green light was given to push the project to completion. With a biological assessment written, permits from the U.S. Army Corps of Engineers and the California Department of Fish and Game obtained, and CEQA documents filed, initial site work began on March 26, with the in-water installation of the NPB beginning April 7—one day after receiving the necessary permits.

“The timing and the cooperation all fell into place,” said Mark. “Problems with any one of those things could have derailed the whole project. It was really very risky. We were very lucky. It wasn’t my doing or anybody else’s that magically made this happen. It was everyone feverishly working together and we just didn’t run into any major stumbling blocks.”



The NPB, 112 meters long and comprised of 14 separate 8-meter steel frame sections, includes 56 sound projectors spaced approximately two meters apart, 112 strobe lights, and perforated bubble hose.

The strobe lights are powered from an “accumulator” positioned every 12 strobe lights. A mounting plate is attached to the steel support frame to house the accumulators.

The old HORB was a 200-foot-long rock barrier constructed with approximately 12,500 cubic yards of rock and gravel.

After the NPB installation was completed on April 17, operations and fish studies began. On May 26, the NPB was removed. The cost of the project was more than \$1 million.

Data collected during the experiment determined the effectiveness of the NPB in improving the survivability of out-migrating salmon smolts and whether the NPB could be a viable alternative to a physical barrier at the head of Old River.

Results

“It was very surprising that it worked as well as it did,” said Mark. “The initial results showed a 50 percent improvement in the number of fish that were guided away from Old River and stayed in the San Joaquin River and followed the path to the Pacific Ocean.”

DWR Management is planning on using the NPB next year.

“If it continues to show these kinds of results under different flow conditions, it may take the place of the rock barrier,” said Mark. “At least we know that we can put something in the river to help the salmon without hurting delta smelt.”

Studies may lead to another NPB being installed to keep salmon and steelhead from straying from the Sacramento River into Georgiana Slough.

Participants

Credit is due to everyone who participated in the NPB project. DWR participants from the Bay-Delta Office, the Division of Engineering, Division of Planning and Local Assistance, and the Public Affairs Office included Project Manager **Mark Holderman**, **Mike Burns**, **Kevin Clark**, **Katherine Maher**, **Javier Miranda**, **Dave Rennie**, **Gordon Enas**, **Jim Peddy**, **Nicholas George**, **Kari Bianchini**, **Bill Sutcliffe**, **Delia Grijalva**, **Shawn Mayr**, **Matt Notley**, **Mark Lambert**, and **Dale Kolke**.



(Above) Left to Right: DOE Engineer Nicholas George, who assisted in the technical design, documents construction of the barrier. DOE Mechanical Construction Supervisor Bill Sutcliffe explains construction approach to EIMCO vendor representative. **(Right)** Dr. Mark Bowen, a scientist from the USBR's Denver office, designed the fish study and conducted it with his staff and DWR support. DOE Supervising Engineer Gordon Enas (standing) and Temporary Barriers Project Manager Mark Holderman explain Non-Physical Barrier fish monitoring equipment to media representative.



(Left to Right) DWR Deputy Director Jerry Johns explains project to local media with USBR's Dr. Mark Bowen, EIMCO representatives Gary Scott, Trent Gathright, Guy Beauchesne, and DWR project manager Mark Holderman.

Other participants included **Dave Vogel** of Natural Resources Scientists, **Pat Brandes**, **Ryan Olah** and **Cay Goude** of the U.S. Fish and Wildlife Service, **Bill Guthrie** and **Kathleen Dadey** of the U.S. Army Corps of Engineers, **Jeff Stuart** of the National Marine Fisheries Service, **Scott Wilson** of the Department of Fish and Game, **David Lambert, PhD**, and **Andy Tumpenny, PhD** of Fish Guidance Systems, Ltd., **Kaveh Someah**, **Trent Gathright**, **Guy Beauchesne**, **Gary Scott** and **Trevor Auman** of EIMCO Water Technologies, **Jennifer Pierre**, **Lesla Erecius**, **Gregg Roy**, **Russ Grimes**, of ICF Jones and Stokes, Inc., **Sharon McHale**, **Mark Bowen**,

PhD, **John Boutwell**, **Juddson Sechrist**, and **Steve Hiebert** of USBR, **Chuck Hueth** of SAIC, Inc., **Kevin Malone, Jr.** of Cal Neva Construction, and **Sam Johnston** of HTI. Consultant ICF Jones and Stokes wrote the project's biological assessment.

"When I asked the Bay-Delta Office to engage in this effort in mid-January, we all knew this would be difficult if not impossible to pull off in the time frame we had," said **Deputy Director Jerry Johns**. "With the leadership from Mark Holderman of BDO and Jim Peddy of DOE, they went from conceptual idea, to design, environmental review, permitting, contracting and construction in three months. That simply does not happen easily. It took the expertise, hard work, coordination and the 'Can Do' attitude that is the hallmark of the people here at DWR. I could not be more proud of all the people who made possible this real world evaluation of a potentially very useful new technology to better protect migrating salmon." ■

A Role with a Purpose

As Project Manager of the DWR's Temporary Barriers Project, Mark Holderman is achieving his goals as an engineer.

"I think most engineers are not really happy unless they create or build something. To be really satisfied, we have to be able to at the end of the day say I made that or I got that done or I wrote that report," said Mark. "The temporary barriers are one thing in the planning area that you can plan and build every year, usually in the same way, but sometimes a little differently."

As Supervising Engineer and Chief of the Temporary Barriers Project and Lower San Joaquin section of the Bay-Delta Office since 1998, Mark participates in DWR's Delta planning activities, particularly the annual installation and removal of the Temporary Barriers and activities related to the Lower San Joaquin River.

"Even though a rock barrier is not very sexy, at least it is something that's getting done and is doing something positive," said Mark. "It's benefiting the farmers in the south Delta because it helps them to divert water for crops. It allows the Projects to pump water because it mitigates the impacts of pumping on the farmers in this area. In a way, I sometimes feel like I work for the farmers because I do something that directly benefits them."

Mark's DWR career began as an Associate Engineer with the Division of Planning (now the Bay-Delta Office) in 1994. He worked in the Hearing Support Section and South Delta

Management Section for the Delta Planning Branch.

Mark has a Master of General

Administration degree from the University of Maryland and a Bachelor of Science degree in Civil Engineering from the University of Southern California.

Prior to joining DWR, he had a career as a US Air Force Officer in civil engineering planning, design, and construction. In his last military assignment before retiring, he was Chief of a 35-person design and construction office for a major Air Force base in Alaska.

"If I was just writing reports that just end up on the shelf and go nowhere, that would drive me nuts. I think that is why I've been working on the temporary barriers for 10 years," said Mark. "It's one of the things in planning that doesn't get put on the shelf. We put them in and take them out every year. We're out in the field getting work done. We've installed massive temporary pumps to assist ag diversions. We've gone out and done dredging for farmers who couldn't divert water when water levels were low. We've removed tons of water hyacinth from choked waterways to improve conveyance to ag diversions. We get to do stuff out in the field in this program that a lot of planners in planning offices never get to do. It's very satisfying." ■





First Interim Flows Began in October

San Joaquin River Restoration Program

By Pete Weisser

Water planners have achieved two important steps in the complex effort to revitalize the lower San Joaquin River. The first interim flows began in October, and a plan has been developed to improve flows around the Mendota Pool.

“The interim flows and the Mendota Pool Bypass are both major advances for the San Joaquin River Restoration Program,” reports **Paula Landis**, Chief of DWR’s South Central Regional Office in Fresno.

Landis ranks as the top DWR official in the management of the program, designed to implement a 2006 Federal court agreement that settled an 18-year lawsuit over river water use. It will revitalize a 153-mile segment of the San Joaquin River – California’s second longest river – downstream of Friant Dam, a dam in the federal Central Valley Project.

The restoration program has two goals: To reduce or avoid adverse water supply impacts to those who use Friant water, and to restore and maintain fish populations in good condition in the main stem of the San Joaquin, from Friant Dam downstream to its confluence with the Merced River.

The interim flows will enable program scientists to collect data at critical points in the river, regarding flows, water temperature, fish needs, seepage loss, recirculation, recapture and reuse of the water to benefit Friant water users. This vital information gathered during five years of interim flows will help program managers make informed decisions on devising the full restoration

flows, set to begin by January, 2014. Salmon will be introduced starting in 2013. The first interim flows are scheduled between October 1 and November 20, with maximum flows reaching 700 cubic feet per second (cfs) at Friant Dam.

Improved flows in various segments of the San Joaquin are important to the river’s restoration. This summer, attention focused on a plan to assure enhanced flows around the Mendota Pool, a natural widening in the river north of the farming community of Mendota, where natural flows are problematic.

The Mendota Pool Bypass can provide a bypass around the Pool to convey at least 4,500 cfs flows, minimize fish losses in the Pool, and reconnect flows with the main stem San Joaquin River downstream of the Mendota Dam, a small, older dam.

Persons interested in the bypass learned about it in detail during two days of public scoping meetings in late July. One meeting was held on July 28 in Fresno and another the next day in Firebaugh.

Three federal agencies and two State departments are partners in this program, one of the most ambitious river restoration projects in the United States. The U.S. Bureau of Reclamation is the lead federal agency, with expert assistance from the U.S. Fish and Wildlife Service and the National Marine Fisheries Service. DWR and the Department of Fish and Game are the State partners.

In March 2009, President Obama signed into law legislation to authorize and fund the program. ■



DWR Monitors SWP Year-Round for Invasive Quagga, Zebra Mussels

By Pete Weisser

DWR conducts year-round monitoring of California's State Water Project for invasive quagga and zebra mussels, while joining with other State departments to combat mussel movement.

Because mussels are more active during warm weather, extensive monitoring was conducted during summer 2009 at selected locations along the SWP, according to **Tanya Veldhuizen**, DWR biologist and an expert on invasive species. The SWP has been continuously monitored for invasive mussels since February 2008, reported Veldhuizen.

In recent years, DWR enlarged its training of DWR staff on mussel identification and monitoring techniques, to safeguard the SWP from the invasive mussels. At press time for this update, no instances of quagga or zebra presence have been documented in the SWP.

Originally from the Ukraine, quagga mussels spread to the Great Lakes two decades ago. They impacted water agencies and affected ecosystems there. In January 2007, quagga were discovered in Lake Mead, Nevada, their first appearance in the Western United States. All reservoirs and lakes receiving Colorado River water have been exposed to quagga, affecting water systems in Arizona, Southern Nevada and Southern California.

Zebra mussels, similar in background and water agency impacts, were discovered in San Justo Reservoir in San Benito County, in January 2008. The only Zebra infestation documented in California, thus far, it is confined to that isolated reservoir.

Trash rack showing zebra mussel colonization. This demonstrates the rapid reproduction and proliferation on water infrastructure in infested areas. (Inset photo) Same trash rack when first deployed in the reservoir
Photos by Jeff Janik.

Unchecked, both species can alter aquatic ecosystems, clog small diameter pipes, biofoul water diversion structures and damage boat engines.

While Southern California water systems combat quagga introduced via Colorado River water, the chief quagga threat to Northern California waterways and the SWP is associated with recreational boat movements from infested water bodies. Among SWP reservoirs in Southern California, the State Parks Department conducts a boat inspection program at Perris and Silverwood lakes, funded through the State Department of Boating and Waterways. This is a pilot program funded through 2010.

Illustrating the value of boat inspections, quagga mussels were found in April 2009 on a houseboat that came to Lake Oroville from Lake Mead. State Parks staff at Oroville detected mussels in the houseboat's drive components. The houseboat was kept out of the lake and later shipped back to Lake Mead. All houseboats are inspected before launching in Lake Oroville, the largest Northern California lake in the SWP system.

California agencies, including DWR, conduct outreach to recreational boaters, urging vigilance to thwart movement of invasive mussels via boats being trailered from infested waters. The Departments of Boating and Waterways, Fish and Game, Parks and DWR are active in coordinated State outreach to boaters.

"Clean, drain and dry" is the key message given boaters. Their active partnership is vital in blocking spread of the mussels. Thus far, virtually all quagga mussel contamination in California has occurred in Southern California, via distribution of water from the Colorado River.

In a recent summary of DWR activities prepared for the Department of Fish and Game, Veldhuizen reported that the Department has researched retrofits, including chemical and non-chemical control measures within the SWP, and has developed draft plans on quagga mussel rapid response and vector management for the SWP. The draft plans are currently under management review.

The Department provides education and outreach materials and briefings to State Water Project Contractors and other water agencies. Outreach is also directed to recreation managers and recreational boaters at SWP lakes and reservoirs.

For more information on the Quagga/Zebra mussels, the State's response activities and what you can do to help prevent their spread in California, please visit the DFG Web site at www.dfg.ca.gov/invasives/quaggamussel ■

"'Clean, drain and dry' is the key message given boaters. Their active partnership is vital in blocking spread of the mussels. Thus far, virtually all quagga mussel contamination in California has occurred in Southern California, via distribution of water from the Colorado River."

CD substrate with zebra mussels. Photo by Jeff Janik



The Division of Safety of Dams, Protecting the Public for 80 Years

By Bill Fraser

Created in reaction to a tragic 1928 dam disaster that killed more than 450 people in Southern California, California's Dam Safety Program turned 80 this year. It is considered a national leader among dam safety efforts and has had international influence on dam safety programs. Engineers from six continents have visited the Division of Safety of Dams (DSOD) offices to review the program's organization, authority, and effectiveness.

The Early Years

During the early years of the DSOD, the times were not all that different than today. The country felt the grip of the Great Depression and California's budget was shrinking fast. While revenues declined, debate raged on which governmental programs should be eliminated or greatly reduced. The newly created dam safety organization had just been tasked with evaluating the safety of about 600 existing dams. The program was given \$200,000 to hire a few engineers and began this very challenging task.

The events leading to the August 14, 1929 creation of the Division of Safety of Dams began a few decades earlier. During the early 1900's, little oversight was given to dams in California.

Because water development was essential to mining and processing gold, dams were largely unregulated. For example, in the early 1900's the State Engineer had the authority to review plans for construction of just a fraction of the dams built in California, but there were no penalties for lack of compliance.

Things began to change after the Otay and Sweetwater dams in the San Diego area overtopped and failed during the severe winter of 1916. These failures caused 38 deaths and extensive property damage. This tragedy led to additional dam safety legislation, but still the responsibility for dams was shared by several agencies, including the California Railroad and Debris Commissions, leading to inconsistent oversight. Also, dams owned by any municipality employing an engineering staff were completely exempt from any oversight. In 1925, the Sheffield Dam failed during a magnitude 6.3 earthquake, releasing some 30 million gallons of water into the City of Santa Barbara. Although that dam failure did not take a life, there was extensive property damage.



*(Above) DSOD staff celebrated DSOD's 80th anniversary in August.
(Below) Sheffield Dam failed during the 1925 Santa Barbara earthquake. The alluvial foundation of the dam lost strength due to strong shaking causing the embankment slopes and crest to deform, releasing the reservoir.*



(Above) The remains of the St. Francis Dam after failure. The right side of the dam and one monolith of the concrete gravity dam remain.

In 1928, the City of Los Angeles' St. Francis Dam failed upon first filling causing more than 450 deaths and millions of dollars of property damage, much of it in neighboring Ventura County.

"The 1928 failure was a prime reason California developed statutes covering the practice of engineering and state licensing thereof," said **Vern Persson**, retired DSOD Chief. "The task for administering the law was given to The Board of Registration for Civil and Professional Engineers."

In the aftermath of this tragedy, the California Legislature approved the Dam Act, a landmark bill providing comprehensive State oversight of dams. Under the new law, the State Engineer (the Chief of the Department of Public Works) was charged with evaluating the safety of all existing non-Federal dams over a minimum size. The State Engineer was directed to inspect each dam and either issue an approval for continued operation or supervise the repair of those dams found to be inadequate. The Dam Act also required the State Engineer to approve the design and inspect the construction and to supervise the maintenance and operation of all non-Federal dams within the State.

Those familiar with the Division of Safety of Dams will recognize that these tasks remain essentially unchanged today. The engineering methods, of course, have evolved significantly. In the early days, the engineering calculations were performed manually or with a slide rule. Today's engineers use high-tech analytical tools such as finite element stability programs. However, careful site investigations and sound engineering judgments are really the basis for insuring dam performance, and they were just as important in 1930 as they are today.

With its new charge, a small group of engineers in the Dam Safety Office of the Department of Public Works began its initial assessment of the existing dams. The actions of this group are documented in the Division's extensive files. The early files contain just a few names, Messrs. Hawley, Holmes, Perkins, Wing, and Engle, because they inspected and judged the safety of literally hundreds of dams each year. This effort must have been monumental considering the logistical difficulties of travel in the 1930's.

Division of Safety of Dams Timeline

1900's

1916 - Sweetwater and Otay Dams fail during winter storms, killing 38 people

1925 - Sheffield Dam fails during the Santa Barbara magnitude 6.3 Earthquake

1928 - St. Francis Dam fails killing more than 450 people

1929 - Dam Act creates the Dam Safety Office in the Department of Public Works

1929 - Dam Safety Office shuts down San Gabriel Dam construction because blasting caused massive landsliding of the abutment. The project is built 10 years later at a site one mile downstream

1930's

- *Dam of the 1930's - Morris Dam, built in 1935. Concrete gravity, 245 feet high.*

1932 - Great Depression results in severe reductions the State's General Fund

1932 - Initial evaluation of the 600 existing dams concludes and 200 dams are found to need immediate repair. Early staff totals less than 10, and includes engineers and a geologist

1940's

- *Dam of the 1940's - San Vicente Dam, built in 1943. Concrete gravity, 220 feet high.*

1945 - Post-World War II building boom results in an average of 25 dams per year built between 1945 and 1965. Staff increases to about 20 engineers.

1950's

- *Dam of the 1950's - Donnell's Dam built in 1958. Variable radius arch, 291 feet high.*

1956 - Dam Safety Office becomes Division of Safety of Dams (DSOD) within the new Department of Water Resources

1960's

- *Dam of the 1960's - Oroville Dam, built in 1968. Earthfill embankment, 770 feet high.*

1963 - Baldwin Hills Dam fails, killing five people

1964 - Jurisdictional dams now total more than 1000



(Left to Right) The Lower San Fernando Dam's near failure during the 1971 earthquake. Crest roadway is just visible on right side of photo and has completely slumped into reservoir on the left side. The reservoir, overlooking an urbanized area in Los Angeles, is being retained only by the remains of the downstream slope. The Baldwin Hills Dam after failure in 1963. Concentrated foundation leakage caused by subsidence resulted in a fast deteriorating subsurface seepage condition that quickly eroded through the dam itself.

During the Great Depression, times were hard. They knew their job was important. Not surprisingly, these early evaluations resulted in the identification of more than 200 dams in need of immediate repair. Another 200 dams were deemed safe, while the remaining 200 were in need of detailed investigation and analysis to confirm their adequacy.

A real challenge to dam safety in California is the very active geologic environment. Because of California's position at the boundary of two major geologic plates, the crust is continually deforming, resulting in earthquakes, landslides, and subsidence. The early Division recognized the influence of geology on dam safety and made pioneering use of engineering geologist Chester Marlieve in the initial site inspections of dams. Based on his early geologic observations, geologic hazards and adverse foundation geologic conditions so critical to the performance of each dam was recognized. Marlieve's reports of the 1930's serve as a model for engineering geologists involved in dam safety evaluations even today.

Post-World War II Dam Building Boom

The post-war years of 1945 to 1965 saw a return to prosperity in California, accompanied by a remarkable increase in dam building, as the population of the state increased. During these two decades, about 25 dams were built each year. To keep up with the work, the Dam Safety Office increased its staff to about 20 engineers.

In 1956, the Department of Public Works was disbanded and California's water-related governmental programs were consolidated within the new Department of Water Resources. As part of this reorganization, the old Dam Safety Office was renamed the Division of Safety of Dams and incorporated within the new department.

Shaping the Future

Two events occurring at the close of dam-building era really reshaped the Division as we know it today. In 1963, the Baldwin Hills Dam in Los Angeles failed, killing five people and causing millions of dollars in property damage. The dam failed because ground subsidence caused by petroleum withdrawal ruptured the dam's foundation causing internal erosion of the embankment. Within a matter of hours, the dam breached, sending a wall of water into the streets of Los Angeles. Shortly

after the failure, the Water Code was changed to bring off-stream reservoirs under jurisdiction of the state. Dam safety was again in the news, and funding for the program increased and the Division's staff increased to about 50 engineers. The failure was also a reminder of how critical geologic investigations are to dam safety, and the Division, which had made pioneering use of a geologist in the 1930, again hired geology staff.

On February 9, 1971 a magnitude 6.4 earthquake rocked Southern California. The earthquake severely damaged two earth embankment dams in Los Angeles, the Upper and Lower San Fernando dams. Although neither dam failed, the earthquake caused extensive cracking and massive sliding of the embankment slopes. The damaged embankments held just long enough for the reservoirs behind them to be safely lowered, averting disaster. Modern news coverage documented just how close the dams came to being breached, with over 80,000 people immediately downstream.

Out of this near-disaster came significant advances in analytical techniques to predict the performance of earth embankments during earthquakes. It also reminded the engineering community that periodic reevaluation of dams is essential for continued safe operation. Unlike buildings which are built to the standards of the day and not necessarily upgraded when codes change, dams need to be improved as advances in dam engineering indicate they are unsafe.

The Modern Era

It's not surprising that seismic reevaluations remain an important component of the Division's activities today. Using probabilistic seismic hazard techniques to recognize dams with the greatest likelihood of experiencing a strong earthquake, candidate dams for reanalysis are selected considering their design type and consequence of failure. First, the file is reviewed to determine if sufficient information exists to confidently analyze the dam. If not, the owner is instructed to obtain this basic engineering information. The expected performance of the dam is assessed using state-of-the-art analytical techniques. For example, the 200-foot high Calaveras Dam in the East Bay area was found to be seismically deficient by this process. As a result, the dam has its maximum storage restricted. Construction of a replacement dam immediately downstream of the old dam is scheduled to begin early next year.

Although dam failures shaped the Division's history, the successes are really what define the Division. Over the past 80 years many dam projects have been built in California under the jurisdiction of the Division, many with difficult site conditions and design challenges.

Although dam construction has slowed to about five dams per year in recent years, current staff does have the opportunity to work on big, challenging projects. The Metropolitan Water District's Diamond Valley Reservoir completed in 2000 was the largest earth moving operation ever. It consisted of three very long embankment dams up to two miles long and 250 feet high. The 300-foot high Olivenhain Dam in San Diego County, completed in 2004 is the tallest roller compacted concrete (RCC) dam in North America. Currently, the enlargement of San Vicente Dam in San Diego County is in final design and when completed will become the largest RCC dam in the world.

Throughout its entire history Division staff has worked cooperatively with dam owners and their engineering staffs, to develop California water resources in a safe manner. The Dam Act of 1929 allows the Division great latitude in accomplishing its dam safety mission. With that latitude comes responsibility, and the Division has historically met this challenge by taking a leadership role in dam safety. Many current employees are active in professional activities. For example, Division Chief **David Gutierrez** is serving as President of the Association of State Dam Safety Officials (ASDSO), a national organization promoting dam safety. Other staff members write technical papers, give presentations at engineering and geology forums, and attend continuing education training courses. By these means, Division employees prepare for making dam safety decisions each day of the year. ■

(Left to Right) At the San Vicente Dam Raise Groundbreaking Ceremony, DSOD Design Branch Supervising Engineer Mark Schultz, Natural Resources Agency Secretary Mike Chrisman, DSOD Field Branch Senior Engineer Anna Kolakowski. The \$500 million project to raise San Vicente Dam in San Diego from 220 to 337 feet is the largest concrete dam raise in the U.S. and the largest of its kind (roller-compacted-concrete) in the world.



Protecting the Public for 80 Years

1965- An average of 10 new dams built per year between 1965 and 1985

1966- Legislation places off-stream storage reservoirs, such as Baldwin Hills, under the jurisdiction of

1970's



DSOD. Staff increases to about 60 engineers and geologists to handle the additional work

- *Dam of the 1970's- New Bullards Bar, built in 1970. Variable radius arch, 635 feet high.*

1971- San Fernando Earthquake results in the near failure of Lower and Upper San Fernando dams

1979- The federally funded National Dam Inventory Program begins. Staff is temporarily increased to 70 engineers ,

1980's



geologists, and administrative and office services staff as the systematic evaluation of dams is performed

- *Dam of the 1980's- McKay's Point Diversion, built in 1989. Constant radius arch, 233 feet high.*

1985- An average of five new dams built per year between 1985 to present

1989- DSOD moves to its present location at 2200 X Street, Sacramento

1989- Loma Prieta, a magnitude 7.0 Earthquake damages 10 dams in the San Francisco Bay Area with no failures

1990's



- *Dam of the 1990's - Diamond Valley Reservoir built in 1999. Earth and rockfill embankment, 284 feet high.*

1994- Northridge, a magnitude 6.7 Earthquake damages 13 dams in the Los Angeles area with no failures

1999- Division begins a systematic program of seismic reanalysis in urban areas. This program continues to present

2000's



- *Dam of the 2000's- Olivenhain Dam, built in 2004. Roller compacted concrete gravity, 309 feet high.*

2004- Division converts to special funding with operating costs paid by dam owners.

2009- Current projects include the new Calaveras Dam, the Upper Chiquita Dam, the San Vicente Dam raise, and the seismic stabilizations of San Pablo, Big Tujunga, and Perris dams



Lake Oroville Bidwell Canyon Boat Ramp

This year's low Lake Oroville water levels have presented an opportunity to upgrade recreational facilities.

A "Stage 3" boat ramp was officially opened on September 25 to provide better low water access at the Bidwell Canyon Boat Ramp and Day Use Area. The new launch facility, which is just north of Bidwell's main and secondary ramps, will be used when the lake drops below elevation 705 feet. Lake levels have fallen to that stage during five periods of drought since Lake Oroville was initially filled.

The new three-lane concrete ramp, which now extends to elevation 675 feet, will eventually provide boaters with paved launching access down to elevation 640 (if the lake ever drops below that level). Previously, the Spillway Stage 2 ramp was Lake Oroville's lowest concrete boat launch facility at 695 feet.

"To a lot of people, this might seem like a small parking area with a small boat launch, but they don't understand the economic importance to the community," said **Deputy Director Ralph Torres**. "There are as many as 50 bass fishing tournaments in

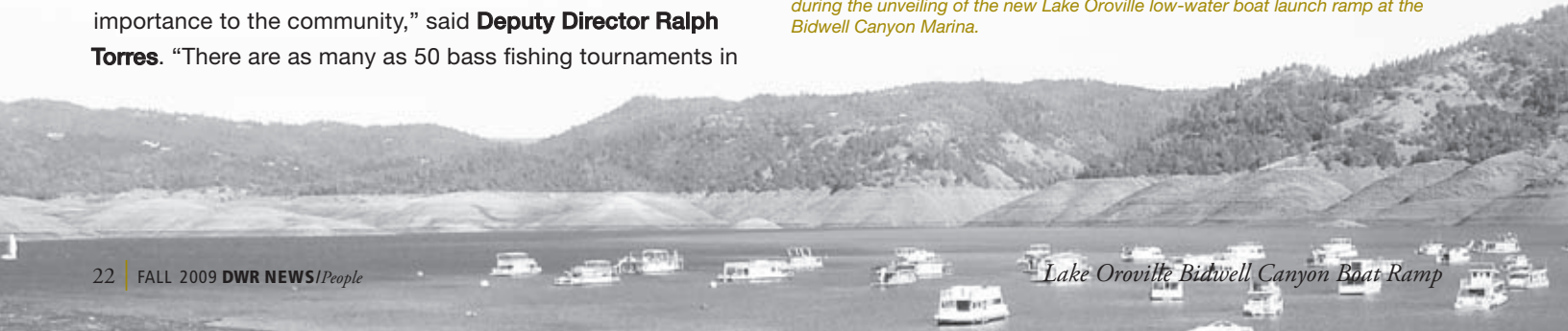
Oroville each year, and that's a key economic generator to this community. Boating is a big contributor to the financial welfare of this area."

Demand for a low water boat ramp was recognized during negotiations for the FERC relicensing agreement. Full implementation of the agreement is awaiting FERC approval of a new license for the Oroville Facilities.

Oroville Field Division Senior Engineer Kevin Dossey remarked, "Local and regional boaters, especially fall and winter anglers, are excited about having year-round access to the lake at all foreseeable water levels."

Four DWR divisions worked together on project design and environmental planning. Oroville Field Division (OFD) engineers oversaw the project, laid out the initial plan and chose the site.

(Above) DWR Deputy Director Ralph Torres (center) cuts ribbon on September 25 during the unveiling of the new Lake Oroville low-water boat launch ramp at the Bidwell Canyon Marina.



During construction of the ramp, 2,400 cubic yards of concrete and 8,500 tons of rock and riprap were used. (Below) Oroville Field Division Senior Engineer Kevin Dossey inspects ramp construction.

Northern Region Office surveyors and engineers conducted topographic surveys using Global Positioning System (GPS), conventional, and bathymetric methods to produce a contour map and a subsequent preliminary design layout.

Staff from the Division of Engineering produced final design plans and specifications, the Construction Office administered the construction contract, and environmental documents were produced by OFD, Division of Environmental Services, and DOE staff. Other Divisions were also involved to some degree.

The design included three principal features:

- A new 1.75-acre concrete parking lot that includes 46 spaces for vehicles with trailers and eight spaces for vehicles only, including two ADA compliant spaces.
- A new 526-foot-long concrete, three-lane boat ramp extending from the parking lot to elevation 640. (It was constructed to elevation 675 and will be extended lower as lake levels allow).
- A new 450-foot-long concrete access road extending from the existing Stage 2 gravel parking lot to the new Stage 3 parking lot.

Project construction costs to date are \$1.6 million but will total about \$2.1 million if the ramp is completed to elevation 640. California's Department of Boating and Waterways is contributing \$275,000.

An impressive amount of materials have gone into the project:

- 14,000 cubic yards of excavation
- 14,000 cubic yards of compacted fill
- 8,500 tons of rock and riprap
- 3,800 tons of aggregate road-base
- 2,400 cubic yards of concrete
- 63,000 pounds of reinforcing steel

"There was an added benefit to the construction of this new boat ramp," said **Bill Cochran**, Supervising Hydroelectric Power Utility Engineer with Oroville Field Division.

"We donated approximately 5,000 cubic yards of soil to the Feather River Recreation and Parks District. They built soccer fields using dirt that we excavated from this site." ■



“Local and regional boaters, especially fall and winter anglers, are excited about having year-round access to the lake at all foreseeable water levels.”

Kevin Dossey

Oroville Field Division Senior Engineer



Lake Oroville Bidwell Canyon Boat Ramp

Zone 7 Water Agency

By Don Strickland

Construction of the State Water Project (SWP) began in 1957 and its major initial facilities were completed in 1973. Yet, south-of-Delta SWP water deliveries started in 1962, six years before Oroville Dam was even completed.

This issue's SWP Contractor Profile looks at one of the two agencies which received that water, Alameda County Flood Control and Water Conservation District, Zone 7.

Zone 7 Water Agency, as it's known for short, is one of 10 active "zones" or geographical areas comprising the Alameda County Flood Control and Water Conservation District (ACFCWCD).

The California Legislature created ACFCWCD in 1949 to provide flood control and water resources for much of Alameda County.

In 1957, Livermore-Amador Valley residents voted to form Zone 7 Water Agency and it became the only zone in the flood control district to have its own elected seven-member board of directors and – in addition to providing flood protection – also serve as a water supplier and groundwater manager.

As a "water wholesaler," Zone 7 sells treated water primarily to four retail water agencies: the cities of Livermore and Pleasanton; the California Water Service Company (serving part

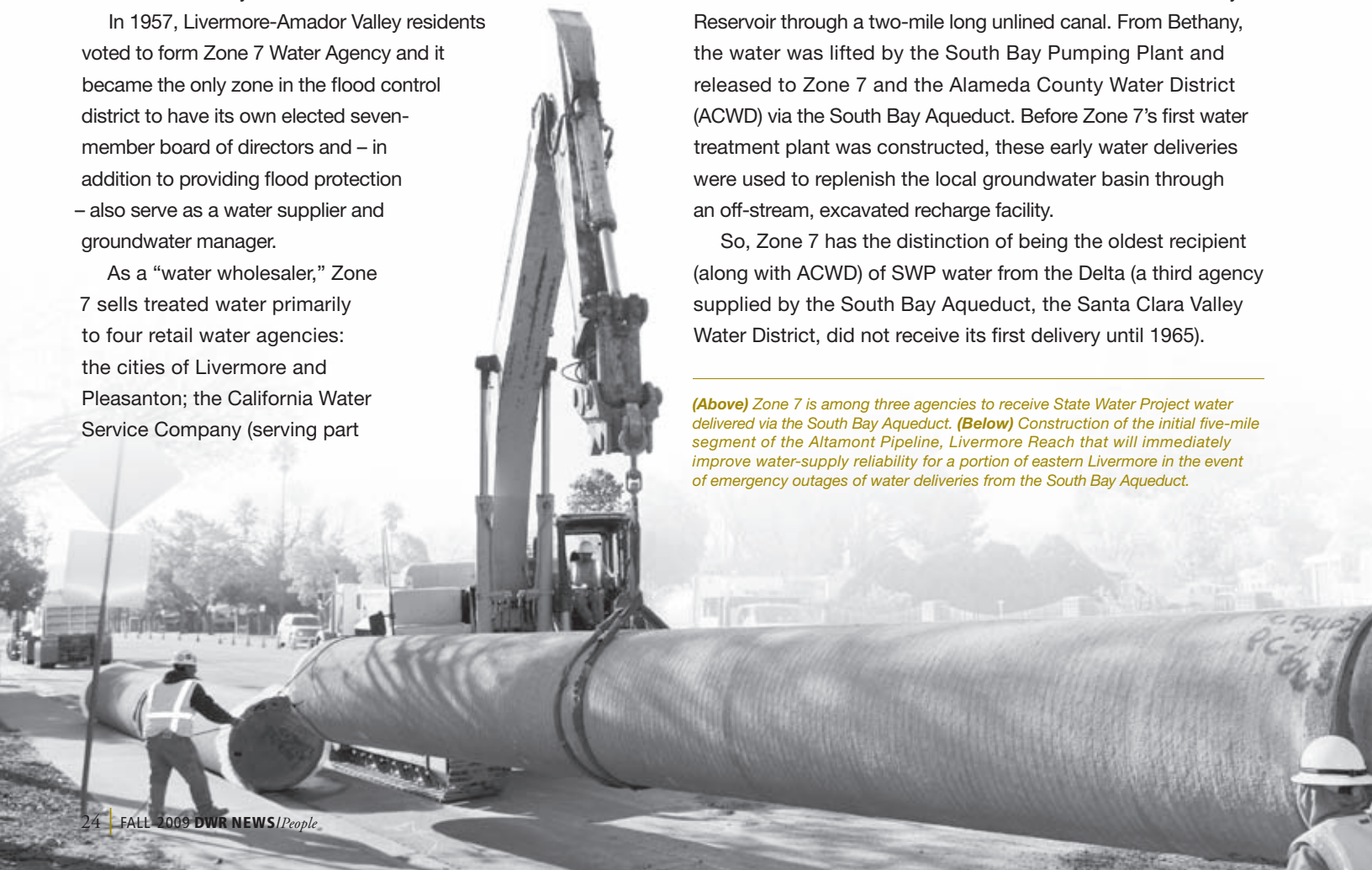
of Livermore); and the Dublin San Ramon Services District. It also provides untreated water directly to agricultural operations, golf courses, and some other customers. Furthermore, it is the groundwater management entity for the Livermore-Amador Valley groundwater basin.

In June of 1962, the first south-of-Delta SWP delivery was made to Zone 7 and the Alameda County Water District (serving Fremont, Newark and Union City) through a portion of the South Bay Aqueduct. Because Oroville Dam was still under construction, DWR accomplished that delivery by purchasing water from the U.S. Bureau of Reclamation (as it did until late in 1967).

Prior to completion of the Banks Pumping Plant, an interim pump station took water from the Bureau's Delta-Mendota Canal and moved it to Bethany

Reservoir through a two-mile long unlined canal. From Bethany, the water was lifted by the South Bay Pumping Plant and released to Zone 7 and the Alameda County Water District (ACWD) via the South Bay Aqueduct. Before Zone 7's first water treatment plant was constructed, these early water deliveries were used to replenish the local groundwater basin through an off-stream, excavated recharge facility.

So, Zone 7 has the distinction of being the oldest recipient (along with ACWD) of SWP water from the Delta (a third agency supplied by the South Bay Aqueduct, the Santa Clara Valley Water District, did not receive its first delivery until 1965).



(Above) Zone 7 is among three agencies to receive State Water Project water delivered via the South Bay Aqueduct. (Below) Construction of the initial five-mile segment of the Altamont Pipeline, Livermore Reach that will immediately improve water-supply reliability for a portion of eastern Livermore in the event of emergency outages of water deliveries from the South Bay Aqueduct.



Zone 7 Water Agency General Manager Jill Duerig is a past general manager/chief engineer for the Scotts Valley Water District and has worked for the Alameda County Water District in various capacities, including as production manager and division engineer in groundwater resources.

She is also a member of the California Bar who has worked as an attorney in a private law firm where she specialized in construction, environmental and water law – almost exclusively for public agency clients.

Duerig has a Public Interest Law Certificate from Santa Clara (CA) University School of Law, a Master of Science degree in Civil (Sanitary) Engineering from the University of Pittsburgh (PA), and a Bachelor of Science degree in Fundamental Science (Chemistry/Biology) from Lehigh University (PA).

In 1962, deliveries to Zone 7 totaled only 494 acre-feet. Today, Zone 7 has a maximum SWP "Table A" entitlement of 80,619 acre-feet per year and supplies treated drinking water to retailers serving nearly 200,000 people in Pleasanton, Livermore, Dublin and (through special agreement with the Dublin San Ramon Services District) the Dougherty Valley area in Contra Costa County.

Zone 7 also supplies agricultural water to farms and vineyards, including Livermore's well-known Wente and Concannon wineries, and provides flood protection to all of eastern Alameda County. The Zone also adopted a Groundwater Management Plan in 2005 and continues to actively manage the basin, producing annual status reports on the groundwater management program.

The three South Bay Aqueduct (SBA) contractors are currently funding DWR improvements to the SBA. Additionally, Zone 7 is paying for an aqueduct enlargement so it can draw its entire 80,619 acre-foot entitlement when it is available.

DWR's project includes a new 425 acre-foot reservoir that will provide some storage for off-peak pumping, thereby reducing energy costs for all SWP contractors.

To make untreated water from the SWP (and rainfall runoff collected in Del Valle Reservoir) suitable for drinking, Zone 7 uses its Del Valle and Patterson Pass treatment plants.

The Del Valle plant, located in southern Livermore, has a capacity of 40 million gallons per day (MGD) and also houses the agency's water quality laboratory and maintenance facilities.

Eastern Livermore is home to the Patterson Pass plant, capable of treating 12 MGD. The accompanying Patterson Pass Ultrafiltration Plant can treat another eight MGD.

To accommodate anticipated growth in its service area, Zone 7 has been planning another treatment

facility in the Altamont Hills, east of Livermore. Because of the current state and national economic slowdown, construction is not expected to begin until at least 2014. In the meantime, Zone 7 has commissioned a peer review study to confirm that the location and process selection decisions made for the plant are ideal.

At an estimated cost of \$138.8 million, the current design for the Altamont plant's first phase plans has a capacity of 24 MGD, expandable in Phase II to 42 MGD.

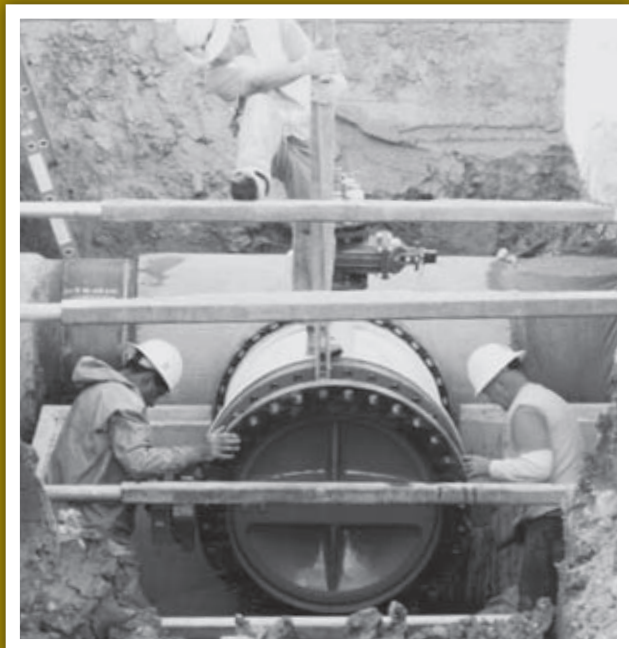
The Altamont project will include a \$62.8 million 11-mile long pipeline from the plant to Livermore's Kitty Hawk Road. This past summer, the agency completed construction of an initial 5.6-mile pipeline segment that will, independently of the larger project, have its own immediate benefit by improving water supply reliability for a portion of eastern Livermore.

Typically, 80 percent of Zone 7's water supply originates as Sierra snowmelt and is conveyed by the SWP through the ecologically fragile Delta to the South Bay Aqueduct.

But, court-ordered Delta pumping restrictions aimed at protecting endangered fish species, coupled with three consecutive drought years, reduced 2009's SWP deliveries to 40 percent of contractor requests. These factors, along with other issues (such as fragile levees and the threat of seismic activity) cast considerable doubt on long-term Delta water supply reliability for Zone 7 and other SWP contractors.

Zone 7's General Manager since February 2007 (and one of the few women to head an SWP water agency) is **Jill Duerig**. She joined Zone 7 in 2005 and was quickly promoted to assistant general manager of engineering before moving up to the top job.

DWR NEWS/People contacted Duerig for her thoughts on the Delta and other issues affecting her agency.



“Groundwater is a critical component of our integrated regional water management. During wet years, we bank excess supplies in the groundwater basin so that we have reserves for use during dry years.”

(Left) In 2009, Zone 7 is constructing two new municipal wells to enhance ability to deal with unplanned outages. The wells are located in a groundwater recharge area located between Livermore and Pleasanton. (Below) Lake Del Valle southeast of Livermore is used by the SWP to store some Delta-conveyed water for Zone 7, the Alameda County Water District and the Santa Clara Valley Water District. Zone 7 also receives rain runoff from the local watershed stored in Del Valle.

Since you get 80 percent of your water from the Sacramento-San Joaquin Delta through the State Water Project, would you say the Delta water reliability crisis is currently your biggest concern...?

Reliability of the SWP and the Delta crisis are definitely major concerns for Zone 7, which is why we are active supporters of both the Bay-Delta Conservation Plan (BDCP) effort and the Delta Habitat Conservation and Conveyance Program (DHCCP), sitting on the steering committee of the former and representing SWP on the executive committee of the latter. We are enthusiastic supporters of the coequal objectives of water supply reliability and ecosystem recovery. However, the Delta crisis certainly isn't the only concern right now for Zone 7. Another major concern has to do with the current financial crisis (best seen by the slowdown in local development) which is aggravated by our emphasis on conservation (which results in reduced revenues).

Considering the ongoing uncertainty about moving water through the Delta to SWP contractors, what are you doing to ensure that you'll have enough water to meet your demand...?

We have been supporting interim actions in the Delta to protect fish, such as the Two-Gate Project and further evaluation of fish screen alternatives. In addition, we have conducted water supply studies to look at whether there are opportunities for local supplies.

(The Two-Gates Fish Protection Demonstration Project, proposed by the U.S. Bureau of Reclamation, would install and operate removable gate structures at two key locations in the Delta to test whether they can improve protection for Delta smelt and other sensitive aquatic species.)

How does groundwater figure into your supply portfolio...?

Groundwater is a critical component of our integrated regional water management. During wet years, we bank excess supplies in both the local groundwater basin and in banks operated by Semitropic and Cawelo so that we have reserves for use during dry years. This conjunctive use of our State Water Project supply also buffers seasonal fluctuations in demands and preserves the supply in large storage reservoirs that are not subject to evaporative losses. Furthermore, recharging our basin with imported water improves the quality of groundwater by better balancing mineral concentrations.

You have a very ambitious water conservation program. How important is conservation to Zone 7 in this time of limited supply and court-imposed Delta pumping restrictions...?

Conservation is less important to Zone 7 in the short term than many other agencies due to the large reserves of water stored both in our local groundwater basin and in out-of-basin storage (Semi Tropic and Cawelo). However, conservation is critical to Zone 7 in the long term. In April 2009, the Zone 7 board adopted a resolution supporting ACWA's Policy Principles on Water Conservation and Water Use Efficiency (See first bullet on webpage, <http://www.acwa.com/issues/PolicyPrinciples>). These policies include the 20 x 2020 Goal ("ACWA supports the Governor's statewide goal to reduce per capita water use 20 percent by 2020, which translates into a statewide aggregate of 1.74 million acre-feet of additional conserved...") and the Local Water Resource Development Goal ("Increasing water reuse (recycling), cleaning-up polluted or otherwise unusable groundwater and desalination and development of storm water recharge..."), among many others. Zone 7 has used these principles, along with a cost-benefit analysis of best management procedures/demand management measures conducted by Kennedy-Jenks, to expand its conservation program and pilot some additional measures not previously implemented. As a member of California Urban Conservation Council, Zone 7 is committed to ongoing water conservation efforts.

How does Solar Power figure into your efforts...?

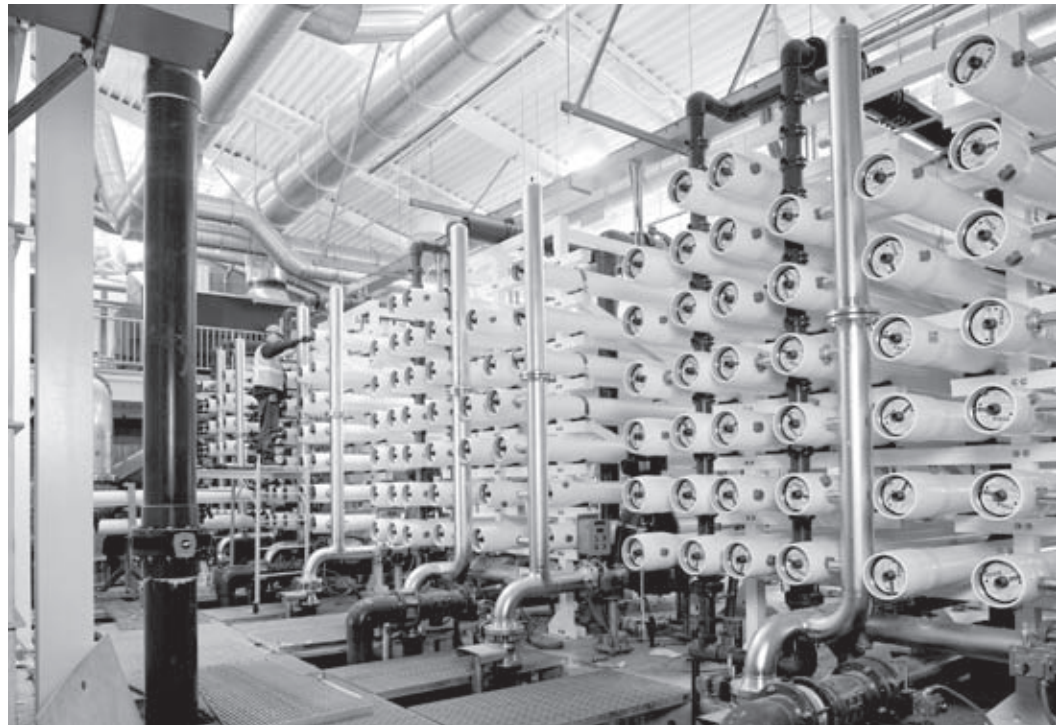
Zone 7 is short on capital for major improvement projects at this time. However, after reviewing alternative energy opportunities available for various Zone 7 facilities, we have entered into a "Power Purchase Agreement" for the installation of photovoltaic cells at our Del Valle Water Treatment Plant which will provide almost half of the power demand for this facility. Installation is behind schedule but is progressing. In addition to the solar power project, Zone 7 is also attempting to reduce its carbon footprint by participating in the California Climate Action Registry, applying for membership in both WAPA (Western Area

Power Administration) and PWRPA (Power and Water Resources Pooling Authority), participating in PG&E's demand reduction program, and considering greener options when replacing outdated fleet vehicles.

SWP water is delivered untreated. How do you approach the task of turning it into a quality product for your customers...?

As delivered, the SWP water satisfies the needs of our agricultural customers. These untreated water customers are primarily using the water to irrigate vineyards, a \$200 million-per-year industry. Interestingly, our agricultural customers represent only about 10 percent of our demands but they are ahead of our urban water users in conservation. During the drought in the early '90's, they implemented some significant improvements to their irrigation systems which resulted in halving their per-acre demand without reducing the number of grapes produced, thus doubling their water-use efficiency.

Treated water is supplied to our water retail agencies for municipal and industrial uses. This takes one of two forms. The first is pumped groundwater. In addition to drought use, Zone 7 currently peaks off its groundwater basin during the high



(Above) Located in Pleasanton, Zone 7's new Mocho Groundwater Demineralization Plant slows down the buildup of salts and minerals in the groundwater basin, thereby facilitating the use of recycled water. It also helps soften some of the groundwater supplies delivered primarily to the western side of Zone 7's service area.

demand months. During a normal or wet year, the hard groundwater is softened through the use of reverse osmosis membrane technology, then chloraminated to provide a distribution system disinfectant residual.

The second form of treatment is more direct. South Bay Aqueduct water that is not recharged goes directly to one of our surface water treatment plants. Del Valle and Patterson Pass WTPs are both conventional treatment plants. There is also an ultra-filtration membrane facility at the Patterson Pass site. Summertime algal taste and odors are currently addressed by interim treatment with powdered activated carbon (PAC) until long-term plans for ozonation can be implemented. Both plant sites use a combination of solar drying and mechanical dewatering for solids byproducts.

All of our facilities typically produce treated water that is of significantly higher quality than the minimum state and federal primary drinking water standards. In fact, our Del Valle plant just received American Water Works Association's 10-year Directors Award of recognition from the Partnership for Safe Water. Only two other plants in the California-Nevada section qualified for this award.

Zone 7 is part of the Bay Area Water Agencies Coalition. What is that and how does being a member benefit your agency...?

BAWAC is part of the Bay Area's integrated regional water management planning effort's governance group, representing the water-supply functional group (as compared to flood, watershed or wastewater functional groups). By working with BAWAC, Zone 7 has received Prop 50 funding to assist in the construction of the groundwater demineralization/RO facility.

What about the Eastern Alameda County Conservation Strategy...?

U.S. Fish and Wildlife Service asked Zone 7 to organize the EACCS during our negotiations related to development of the Biological Opinion (BO) for the Altamont Water Treatment Plant. The Steering Committee for EACCS is made up of the following agencies: Alameda County Community Development Agency, Alameda County Congestion Management Agency, Alameda County Waste Management Authority, Alameda County Resource Conservation District, California Department of Fish and Game, Cities of Dublin, Livermore, and Pleasanton, East Bay Regional Park District, Natural Resources Conservation Service, San Francisco Bay Regional Water Quality Control Board, U.S. Fish and Wildlife Service, and Zone 7 Water Agency.

Since November 2007, the EACCS Steering Committee has been developing the Conservation Strategy. The Conservation Strategy will provide a blueprint for conservation of specific biological resources, particularly those subject to federal and state regulations, for eastern Alameda County. The framework provided in the Conservation Strategy will inform and streamline environmental documentation and permitting for future development and infrastructure projects.

The Conservation Strategy will be the basis for a programmatic BO for the study area. This will facilitate future environmental permitting by enabling Zone 7 to append its water system and flood protection projects to the biological opinion so long as the avoidance, minimization, and mitigation measures for impacts to focal species are consistent with the Conservation Strategy. The Conservation Strategy will have similar advantages to other Steering Committee members.



What is the Alameda Creek Fisheries Restoration Workgroup...?

Zone 7 has been cooperating closely with various stakeholders within the Alameda Creek watershed for several years to develop data for potential fisheries restoration efforts in the future. Funding partners tend to provide a little more direction for scope of work being performed.

The signatories to the workgroup are:

1. Alameda County Flood Control and Water Conservation District
2. Alameda County Resource Conservation District
3. Alameda County Water District
4. Alameda Creek Alliance
5. American Rivers
6. California State Coastal Conservancy
7. California Department of Fish and Game
8. East Bay Regional Park District
9. National Marine Fisheries Service
10. Natural Resources Defense Council
11. Pacific Gas and Electric Company
12. San Francisco Public Utilities Commission
13. San Francisco Regional Water Quality Control Board
14. U.S. Army Corps of Engineers
15. U.S. Natural Resources Conservation Service
16. U.S. Fish and Wildlife Service
17. Zone 7 Water Agency

In addition, Zone 7 is participating in a pilot program and has executed a Statement of Understanding with Sonoma County Water Agency and NOAA-NMFS to participate in the development of the Central California Coast Steelhead Recovery Program and to provide local data to NMFS.

Eastern Alameda County relies on Zone 7 for flood protection. What kind of planning and resources do you have in place to meet that expectation...?

In 2006, Zone 7 adopted its Stream Management Master Plan (SMMP) and associated programmatic EIR. For the past

40 years, the Valley has relied primarily on channelized arroyos, many of them concrete, to convey stormwaters through the area as quickly as possible. But the new, more environmentally friendly SMMP's vision over the next three decades is to create a flood-protection program that relies largely on using the future Chain of Lakes, a series of mined-out gravel pits between Livermore and Pleasanton, to detain storm water in the Valley. The stored water would be released downstream only after storms pass through the area – meaning arroyos can be kept in a more natural state than under the channelization method.



Not only significantly less expensive when it comes to flood control, this technical approach also affords opportunities to:

- increase opportunities for ecosystem enhancements
- improve arroyo water quality and habitat
- increase the connectivity of trails and recreational opportunities in the Valley
- promote public understanding of the watershed through educational programs

An implementation plan for the SMMP which will include some funding options is in a draft format. In the meantime, Zone 7 funds its maintenance and improvements by property tax revenues and its expansion projects by developer impact fees.

You're also involved in groundwater basin salt/mineral management. Please explain what you're doing in that area.

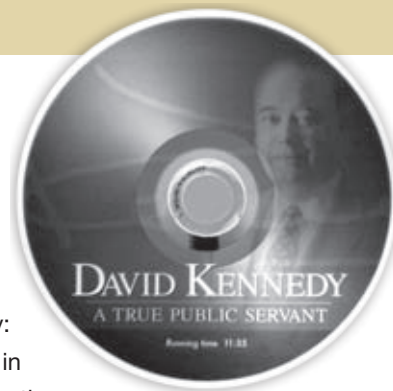
In May 2004, Zone 7 adopted a Salt Management Plan (SMP). This was required under by the San Francisco Bay Regional Water Quality Control Board ("Board") as part of the area's "Master Water Recycling Permit" and was approved by the Board on September 24, 2004. The SMP, which was incorporated by reference into both the Groundwater Management Plan and the Water Quality Management Program (WQMP) Implementation Plan, identifies the need to construct and operate groundwater demineralization facilities to improve the groundwater basin's salt balance, to allow regional water recycling and to improve delivered water quality on the west side of the Zone 7 water delivery system. Start-up of the \$30 million facility is underway (water is already being demineralized) and final completion is expected shortly. ■

Film and Video Unit Wins National Awards

DWR's award-winning Graphic Services' Film and Video Unit won two awards from the National Association of Government Communicators in 2009.

Television Communications Center Director **Mark Lambert** won the Blue Pencil and Gold Screen Award for "A Good Reflection," a 30-second water conservation Public Service Announcement (PSA). Television Specialist **Albert Madrid** won the Blue Pencil and Gold Screen Internal Communications Award for "David Kennedy: A True Public Servant," a video tribute to DWR's former Director.

The PSA, "A Good Reflection," delightfully emphasizes that stretching our water supply is necessary to California's future and suitably encourages its protection and conservation. "This is the department's first PSA to be produced and released in High Definition," said Lambert.



"This thought-provoking PSA plays big and beautiful."

The video titled "David Kennedy: A True Public Servant" was created in 2008 to honor David Kennedy during the Association of California Water Agencies' Spring Conference. Kennedy, who was DWR Director for 15 years, passed away in December of 2007.

During the video presentation at the ACWA conference, Former Governor Pete Wilson admitted, "I'm tap-dancing because that video was so good it took my speech!"

To view the PSA, visit DWR's Web site at <http://www.water.ca.gov/newsroom/video/drought.cfm>

To view the video, the Web site address is <http://www.water.ca.gov/newsroom/video/general.cfm> ■



(Right) Left to Right: With NAGC awards, Director Snow, Mark Lambert, Albert Madrid, Dorothy Benjamin, and Chief Deputy Director Sue Sims. Benjamin also received a NAGC award for the State Fair "California World Class Delta" Exhibit, which is featured in the Spring/Summer 2009 DWR NEWS/People.

Alumni Picnic

DWR's Alumni Club gathered for their Annual Fall Picnic on September 10 at Howe Park in Sacramento. DWR's Alumni Club, which was created in 1993, consists of 450 members. To join the club, email Bob Bailey at bbailey@sprynet.com



Sustainability at DWR

By John Engstrom

This is the second feature of the new and ongoing sustainability news. A special thank you to **Director Snow** for his opening article in the last issue which set the tone for a new column dedicated to highlighting the people and news making DWR a more sustainable business.

Our first recognition goes to the Oroville Field Division (OFD). The OFD recently received a check for over \$30,000 from PG&E for implementing energy conservation measures. In the recent Thermalito Afterbay Pump Replacement Project, OFD qualified for a PG&E incentive for the replacement of aging motors with new high efficiency motors. These motors exceeded standard efficiencies for new motors to qualify for this award. Great job **Pete Scheele**, Chief of OFD, and staff that helped make this happen!

In addition to the OFD, the Sutter Maintenance Yard received recognition as the Commercial Recycling Super Star for summer 2009 from Yuba Sutter Disposal, Inc. The award recognizes the Sutter Maintenance Yard's proper and regular use of recycle containers compared to other users in its area. Congratulations to **Karen Hull**, Superintendent of the Sutter Maintenance Yard, and her staff for embracing the recycling spirit.

Vermicomposting!

Yes, DWR staff have created vermicomposters to help reduce our waste. Known to be a better way of composting kitchen waste, vermicomposting uses earthworms to convert organic wastes, such as vegetables, into very high quality compost.

"Vermicomposting is sustainable because it closes the loop (cradle to cradle), diverting our waste from the waste stream. Vermicomposting enriches the soil with nutrients, increases moisture retention, improves structure and provides a good environment for beneficial soil organisms," said **Nate Frank**, Staff Services Analyst with Capitol Outlay and Sustainable Business Practices Programs in the Division of Management Services.

(Right) Located in the Resources Building, vermicomposting bins filled with more than a thousand worms are helping reduce garbage by converting fruit and vegetable scraps into feed for plants.

To date, there are two reported DWR sites already engaged in vermicomposting. **Rob Barry**, Senior Engineering Geologist with the Geotechnical Structures Branch in the Division of Engineering (DOE), has created two vermicomposting bins at the West Sacramento facility on Industrial Boulevard

that houses the Division of Environmental Services, Division of Integrated Regional Water

Management, and DOE. The composting bins are located in the common kitchen area. Rob says since he placed them in the kitchen last March, staff have fed the hungry worms vegetable kitchen waste and coffee grounds.

"The worms have been composting with 'no mess and no smell,'" says Rob.

Nate has had multiple vermicomposting bins at his cubicle on the third floor in the Resources Building for nine months. He feeds his worms coffee grounds and vegetable waste from the Resources Building cafeteria. In addition to his office bins, he has a few at home. Nate has single-handedly been reducing the Resources Building's waste output.

If you would like to learn more about vermicomposting, or help reduce DWR's waste footprint, please contact the **DWR_Green_Team@water.ca.gov**. You, too, can make a difference in reducing DWR's carbon footprint, and move DWR toward a more sustainable business model. Visit the "Greening DWR" Web site at <http://aquanet.water.ca.gov/dwrgreen/index.cfm> ■



DWR Employees participate in Trans Tahoe Relay Swim

On July 18, four DWR employees participated in the 2009 Trans Tahoe Relay Swim across Lake Tahoe. The Trans Tahoe Relay Race, which began in 1931, now includes more than 900 swimmers gathering every July to swim 11.5 miles from Sand Harbor Beach, Nevada to Skylandia Beach, California.

The team, known as “DAM (Davis Aquatic Masters) Fine,” consisted of five current and previous DAM swimmers, two of whom are Operations & Maintenance (O&M) employees. Team members included (in race order): **Sarah Dasher, Isabel Faria, Remy Rehal (O&M), Renu Rehal, Phil Huang, and Lynne Esparza (O&M).** Boat driver Tom McGivney and videographer Gurdip Rehal are from the California Energy Resources Scheduling Division.

“This was the first swim we all united in. We actually hadn’t met all our team members until the morning of the race,” said Remy, Team Captain. “We did not meet our lead swimmer, Sarah, until the race day. A week before the race the other five members of our swim met up and did a team swim in Lake Natoma. Lynne and I work together at the JOC.”

All team members have entered numerous swimming competitions in the past. However, for some swimmers, this was their first time competing in an open water swim.

The team was created by Remy, who has been swimming competitively since age four and has open water experience from Donner Lake, Lake Berryessa, and the San Francisco Bay.

“It was always something that Remy and Renu wanted to do after they had competed in the Alcatraz to San Francisco race, but they did not know enough accomplished swimmers to compete in the Trans Tahoe race,” said Lynne. “Tom stepped up and was willing to assist us in our race by offering to command the pace boat for our team and Gurdip offered document our accomplishment on video.”

Training

Training, which began in May, included swimming in Lake Berryessa. As water temperatures increased, they practiced swimming in Lake Natoma where the water was colder and more similar to Tahoe conditions.

“We actually never got a chance to train in Tahoe before the swim,” said Remy. “We focused on trying to get acclimated to cold water, so when we raced in Tahoe the only difficulty we would have would be the altitude adjustment.”

The Race

“The water was perfect, not terribly cold, and crystal blue,” said Lynne. “The weather was mild as the morning progressed easily moving towards a comfortable low to mid 80’s. None of us experienced any altitude sickness. All in all, our team swam strong and efficient being that as a team we had not really trained together consistently.”

The race is challenging due to extreme cold water and breathing difficulties in high altitude. Wet suits are not allowed for the swim.

The race is divided into three sections: the first section is six 30 minutes leg, the second section is six 15 minute legs, and the third section is six 10 minute leg. Relay order is selected and members must rotate through the various legs of the swim until reaching the finish.

The “DAM Fine” team neared the marker buoy for the finish with the fourth swimmer

Renu into the 10 minute section of the race. As a team, they decided to have Remy finish the race, but together as a team they all jumped in and swam behind her to the finish line.

Remy crossed the finish line with a team time of 5:14:23.5. The team placed 25th out of 43 in the open division, and overall 89th out of 139.

“Both Remy and myself, are proud of our team’s accomplishment of doing so well in this race, and we look forward to competing next year in the Trans Tahoe International Relay Race,” said Lynne. “To our teammates, boat drivers, videographer, and on-board nurse THANK YOU- we could not have done it without you!! See you again next year for another DAM Fine relay team competing in Tahoe!”

To see us in action check us out on youtube: <http://www.youtube.com/watch?v=n7tp6tT711U> ■



(Above) Left to Right: Trans Tahoe Relay Swim Team included Isabel Faria, Remy Rehal of DWR, Lynne Esparza of DWR, Renu Rehal, Phil Huang, and Sarah Dasher. (Below) Team Captain Remy Rehal finishes the race.



Remembering DWR's Last Five Decades

When **Vern Knoop** joined DWR 50 years ago, the construction of the State Water Project was just beginning and DWR's first Director, Harvey O. Banks, was leading the Department in actively recruiting employees nationwide to work on this project, previously known as the Feather River Project.

Vern not only remembers the start of his DWR career in 1959 and the Burns-Porter Act passed by the Legislature, authorizing construction of a State Water Project; he also recalls Ben-Hur was the top grossing film in the U.S., Gigi was "Best Picture" at the 31st Academy Awards and Ethel Barrymore passed away.

"I sometimes wonder what the Department, and the State, would have been like if the water bond had not been passed by the voters in 1960," said Vern.

With his Bachelor of Science degree in Civil Engineering from Kansas State University, Vern was recruited to work for DWR. Vern, who raised wheat and cattle on his family farm in Kansas, moved to California to begin his DWR career.

"On June 11 about 10:00 A.M., I arrived at the Southern District Office, at 11th and Grand, Los Angeles, having driven from Barstow, California that morning and from Kansas during the prior two days," said Vern.

Vern's first DWR assignment was working on surface water hydrology.

"That work lasted until a new program called "Planned Utilization of Groundwater Basins" was started under the same supervisor," said Vern. "I was selected to work on that program; probably because I had finished my military obligation and, therefore, they believed I would be around for some time. I didn't know at the time how long."

To attain additional experience, Vern joined the Operations Branch.

"That Branch turned out to be interim because it wasn't the organization that would ultimately operate the State Water Project," said Vern.

After being promoted, Vern went to work in the Relocations Unit. He negotiated agreements for water companies to move facilities, so the SWP could be constructed in Southern California. He eventually became a Program Manager and later Chief of that Unit.

"One memorable time while in Relocations was when a squatter at Cedar Springs Dam site (the lake was later called Silverwood Lake), chased the Southern California Edison (SCE) workers off with a shotgun," said Vern. "SCE was preparing to relocate its 29 transmission towers so the dam and lake could

be built. After the lake was finished, Juanita, the squatter, decided the State had built her a beautiful lake."

Of all his assignments, Vern enjoyed working on relocations the most. "Relocation work was satisfying because I was able to contribute to the construction of the SWP giving me a sense of accomplishment," said Vern. "To complete our assignments, we worked with telephone, railroad, road, and electrical companies. I negotiated, with SCE to relocate 29 transmission towers that carried power from Hoover Dam to Southern California. Those towers were moved out of the bed of the lake."

Other efforts by the Department included relocating the Oroville area's "Mother Orange" tree, a railroad and a cemetery. By 1967, the Southern District had about 500 employees, including a complete design staff, and the Department had about 4,500 employees.

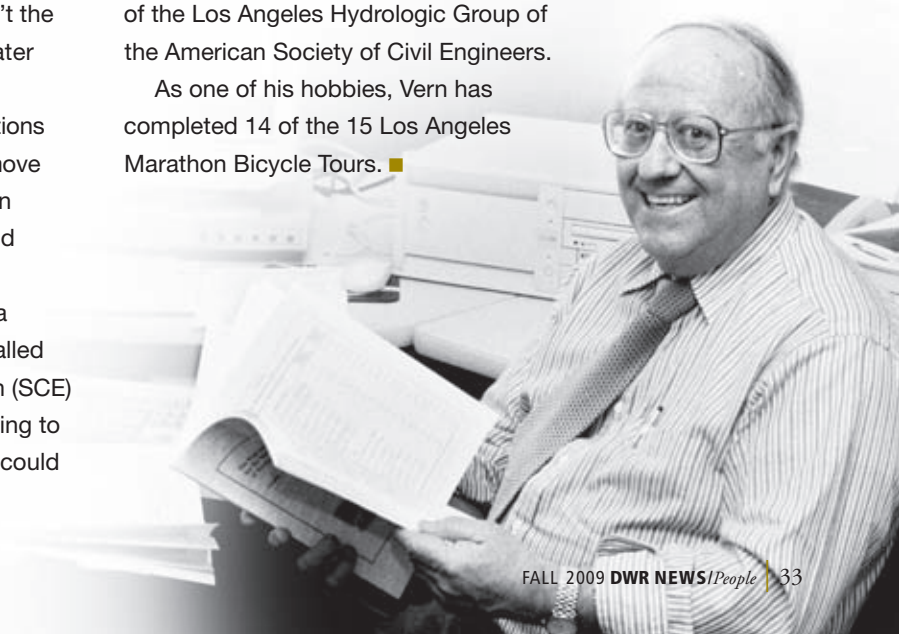
After the relocation work was essentially completed, Vern went back to working on hydrologic studies, then to Statewide Planning.

Prior to his DWR career, Vern was an assistant to a county engineer; he was in charge of building Federal Aid Secondary Roads. He later worked for a surveying company and served in the U.S. Army.

"I am fortunate to have worked for DWR, as it is a very professional organization," said Vern, a Senior Engineer and Chief of the Water Supply Evaluations Section in the Water Management Branch for Southern Region Office.

Vern also became part of the Board of Directors and the Treasurer at a Community Garden in the Hollywood Hills. He has served both as Director and as Chairman of the Los Angeles Hydrologic Group of the American Society of Civil Engineers.

As one of his hobbies, Vern has completed 14 of the 15 Los Angeles Marathon Bicycle Tours. ■



Twenty-Five Years of Service



Chuck Borelli
Management Services
Training Officer
October 2009



Eydie Duggan
Statewide Integrated Water
Management
Office Technician
November 2009



Michael Duggan
Management Services
Printing Trades Supervisor I
September 2009



Lino Hernandez
Engineering
Architectural Associate
July 2009



Armand Jones
Operations and Maintenance
Hydroelectric Plant Electrician I
(San Joaquin Field Division)
July 2009



James Kwong
Technology Services
Systems Software Specialist II
December 2009



Jeannie Love
Operations and Maintenance
Utility Crafts Superintendent
(San Luis Field Division)
August 2009



Ruben Martinez
Southern District
Water Resources Technician II
September 2009



Marjorie Sales
Technology Services
Assistant Information Systems
Analyst
October 2009



Steven Speck
Operations and Maintenance
(Oroville Field Division)
Hydroelectric Plant Mechanical Supv.
July 2009



Robert Stewart
Operations and Maintenance
(San Joaquin Field Division)
Hydroelectric Plant Electrician I
(Engineering) - September 2009



Ernie Taylor
San Joaquin District
Senior Engineer
July 2009

Forty Years of Service



Bruce Jackson
Operations and Maintenance
Hydroelectric Plant Maintenance
Superintendent
(Southern Field Division)
July 2009

Professional Engineer Exam Graduates



Eli Ateljevich
Bay-Delta Office
Engineer
July 2009



Amin Islam
Engineering
Engineer
July 2009



Lianwu Liu
Bay-Delta Office
Engineer
July 2009



Lan Liang
Bay-Delta Office
Engineer
July 2009



Charles Mee
State Water Project Power & Risk
Office
Senior Hydroelectric Power Utility
Engineer (Supervising)
April 2009



Subir Saha
Bay-Delta Office
Engineer
July 2009



Selvaratnam Selvamohan
Flood Management
Engineer
July 2009



Christopher Williams
Flood Management
Engineer
July 2009

Transmission Planning Team Awarded Unit Citation

The Transmission Planning Branch was awarded a Unit Citation for their exemplary work in planning, retaining, and acquiring adequate transmission to serve the State Water Project's needs under the California Independent System Operator's (CAISO) Market Redesign and Technology Upgrade. The team ensured that adequate physical transmission rights at a reasonable rate remain in place, planning and taking the necessary steps to ensure there is adequate 1) physical transmission service built in the future to serve Banks and South Bay Pumping Plants and 2) financial transmission rights were allocated to the SWP by the CAISO. This was achieved through lengthy meetings and negotiations with CAISO and litigation through the Federal Energy Regulatory Commission. The amount of work, complexities, and extremely short deadlines to achieve these results was unprecedented. The Team's dedication and commitment to a successful completion of these tasks has contributed to maintaining the delivery of water at an affordable cost, now and into the future. The Transmission Planning Branch is part of the SWP Power and Risk Office.



(Front Row) Left to Right: Transmission Planning Team includes Maghsoud Saghaimarouf, Maifiny Vang, Daniel Cretu **(Second Row)** Chief Power Planning & Contract Management Michael Werner, Chief of SWP Power & Risk Office Veronica Hicks, Barry Mahoney, Rick Buckingham, Lee Terry, and Deputy Director Ralph Torres (Not in Photo: Linda Quok, Chief Transmission Planning Branch).

Retirements

Patrick Parsons



"I always say it took the first 20 years of my working life for them to incent something I was good at," said **Patrick Parsons**, who retired in July with more than 25 years of State service. "The best part of working on GIS (besides all the fantastic analysis abilities) is being at the cutting edge of

new, continuously developing industry that takes advantage of advances in technology. I learned something new about this program everyday."

During the beginning of his 17 years with DWR, Pat began as a Typist, Junior Engineering Technician, and Water Resources Technician.

Thanks to his supervisor, Pat sparked an interest in the area of technology when he was asked to help get the Land and Water Use Section into the computer age as it related to Land Use surveys. Pat began training on Autocad software, GeoSQL, and Arc View.

"My training was mainly under direction of headquarters, but once I got into ArcView it got really exciting. Now we had a program that we easily do analysis with and query for results," said Pat. "I began taking more and more training to learn all the secrets of this program which just increased my desire to learn more."

In his last nine years as Research Analyst (GIS), Pat administered the GIS database for the Northern District's Land and Water Use Unit, utilizing Autocad, GeoSQL and Oracle. Since his promotion to Research Analyst II, Pat was part of numerous work groups and GIS user groups. He also researched statistical reports, directed implementation of standards for Autocad, ArcView, and ArcIMS software.

To promote the use of GIS software, methodologies and database integration, Pat also prepared and presented oral and PowerPoint presentations at various organizations, including water districts, public interest groups, local and statewide GIS user groups.

Pat supervised several Northern District projects, including the Land and Water Use Data Collection for Northern District, Climatological Data Program, Feather River Diverter Study, Feather River Rice Temperature Study, and research and

development of tablet PC's and GPS units to facilitate seamless data collection and management during fieldwork.

"With the help of several highly talented people in our district, the team surveyed all the water diversion along the Feather River, took pictures, videotaped underwater, and developed an intranet Web site to disseminate the data," said Pat about the Feather River Diversion Study, a favorite project of his. "This project was the first project under my direction that used all the cutting edge technology available at the time to collect, compile, and disseminate the data in a timely manner."

Pat received unit citations for serving as a member of the California Water Plan Update 2005 Project Team and the Klamath Basin Drought Emergency Team.

Before joining DWR in 1982, Pat worked for a variety of State agencies, including the Public Employee Retirement System, Employment Development Department, and Department of Justice. A native of Salinas, Pat moved to Redding in 1966, Sacramento in 1968 to attend Sacramento State University, and Red Bluff in 1982 to begin his DWR career.

"As for retirement, I plan on doing some consulting in the GIS field, remain active with GIS user groups, and develop several other business opportunities," added Pat. ■

"The best part of working on GIS (besides all the fantastic analysis abilities) is being at the cutting edge of new, continuously developing industry that takes advantage of advances in technology. I learned something new about this program everyday."

Retirements

Peter Chan



From gathering power plant statistics to designing fiber optic and microwave systems for connecting two distant locations, **Peter Chan** is proud of every assignment in his 33 years with DWR.

"I have realized that the theories that I learned have a place to manifest themselves," said Peter. "For example, circuitry principles teach you about how the basics of load and current relate to each other. You can see that you can now troubleshoot a circuit because you know some of those principles."

Peter Chan was raised in Burma, which is officially known as the Union of Myanmar and located in Southeast Asia. He attended St. Paul's High School, where he learned English. He also speaks Burmese and Mandarin. After leaving Burma as a refugee to Taiwan in 1964, Peter earned his Bachelor of Science in Electrical Engineering from the National Taiwan University in 1972.

When Peter moved to Los Angeles in 1973 to reunite with his family, he had no idea what America looked like other than what he had read at a local library in Burma.

Within a year of his arrival in California, he began training in Bakersfield as an electronic technician for Schlumberger. After being transferred to Schlumberger's West Sacramento shop, Peter began repairing and maintaining electronic tools used for logging wells dug for oil and gas production.

While Peter was attending California State University at Sacramento for his Master's degree in Electrical Engineering in 1976, he was recruited by DWR's Dan Herdocia. Peter joined the Energy Division as a junior electrical engineer assisting in the review of power contracts.

After completing his degree in 1983, Peter transferred to the State Water Project Analysis Office as a hydroelectric power utility engineer. He compiled forms on State Water Project (SWP) power plant statistics, such as power generation and how much power was purchased from other utilities.

Peter joined the Communications and Network Support Office, previously part of Management Services and currently part of Operations and Maintenance, to work on data, video surveillance, and voice circuit services.

"At all of the SWP facilities throughout California, I have assisted with connecting fiber optic and microwave systems from power plant to power plant and check site to check site,"

said Peter. "What used to be achievable by telephone companies is now achievable in-house by DWR's fiber optic and microwave system."

Peter's other duties included designing the video surveillance equipment for Southern Field Division's Devil Canyon Powerplant, the fiber optic and microwave backbone for Oroville and North Bay, and reviewing utility and interagency contracts for the microwave tower in Davis.

With his retirement in September, Peter plans to volunteer at his youngest daughter's elementary school.

"Two of my daughters are following my footsteps by studying engineering," added Peter. "My son is following my wife's career path by studying nursing." ■

Sharon Lopez



During her 29 years with DWR, **Sharon Lopez** enjoyed working as office assistant for 11 Sacramento Project Headquarters Chiefs.

"Overall, I have had a memorable experience with my career in DWR," said Sharon. "I met and worked with really great people. I will miss them. Most of all, I will miss my co-workers."

Before joining the Division of Engineering's (DOE) Sacramento Project Headquarters, Sharon worked for the Employment Development Department as a clerk. In addition to providing office support with numerous DOE construction projects, her DWR assignment included the distribution of correspondence, estimates, and logging vehicle mileage.

Sharon's continued dedication and team spirit was recognized in three unit citations. She received an award for the Colusa Bypass Support Sediment Removal Project in 2002, the Oroville Dam and Thermalito Spillway Radial Gates Rehabilitation Team in 2003, and the Gorman Creek Improvement Channel Emergency Repair Team in 2007.

Sharon, a native of Fall River, Massachusetts, worked for a life insurance company before moving to California in 1974. In her spare time, Sharon enjoys cosmetology work and dancing to salsa. Her daughter Kim works in DWR's Personnel Office.

"I plan to keep staying busy with my elderly mom and also be an in-home care provider," said Sharon. "I'm proud to have a fifth generation family and I look forward to spending more time with my eight grandchildren and two great granddaughters." ■

Retirements

Rick Willson



From installing pipelines and monitoring aqueduct leaks to planning and scheduling projects, **Rick Willson** enjoyed the variety of his many years in construction.

Coming from a family of equipment operators and construction workers, Rick always had an interest in construction.

After working in the oil fields in his native Utah, Rick moved to California in 1984 as a truck driver hauling hazardous wastes for geothermal plants. During this period, Rick was offered a job at DWR's Bottle Rock Powerplant, where he became a Civil Maintenance Journeyworker (renamed to Utility Craftworker).

"I began working at Bottle Rock Powerplant in Lake County in 1988. Then, they told me that they would be shutting down in six months," Rick said. "They told me to pick a spot to be transferred to work. I've never been to Southern California and I thought wow! Pearblossom, that sounds like a really nice place."

Rick moved to Pearblossom and began working for Southern Field Division's Civil Maintenance Branch in 1989. As Civil Maintenance Journeyworker, he helped maintain the California Aqueduct, roads, and buildings along the East Branch.

"My job included filling potholes, grading roads, fixing fences, repairing gates, cleaning up areas, and all that kind of stuff," said Rick.

In 1992, Rick entered water operations and maintained revenue meters for State Water Project Contractors. He also assisted in identifying necessary Aqueduct repairs, and helped in the identification, monitoring, and inspection of repairs to Pools 47, 48, and 49.

"After working in the desert for 12 years, I had the chance to return to Northern California and I jumped on it," said Rick.

In 2001, he moved to Sacramento as a Water Resources Engineering Associate (Specialist). In 2007 he was promoted to Associate Cost Estimator in the Division of Engineering's Planning and Scheduling Branch.

"I've worked on the scheduling and contract administration for Tehachapi East Afterbay and East Branch Extension Phase I," said Rick. "From the beginning to end of every project, I gathered all the data for the project and watched what happened to create preliminary and as-built schedules."

"I've worked on the scheduling and contract administration for Tehachapi East Afterbay and East Branch Extension Phase I," said Rick. "From the beginning to end of every project, I gathered all the data for the project and watched what happened to create preliminary and as-built schedules."

If something unplanned happened during work on the project, such as weather delays, then Rick compiled information in support of analyzing the impacts of the delays.

"I have enjoyed my time with DWR," said Rick "I have made a lot of friends here. I am going to enjoy gold prospecting and traveling to see this great country of ours."

Rick and his wife of 35 years have four children, who have also continued their family's legacy in construction. His oldest son became an Operator at Mojave Powerplant and his youngest son is a carpenter. ■

Retirements

Phillip Anderson

Integ. Reg. Water Mgmt.
Associate Land and Water
Use Scientist

Justiniana Asis

Engineering
Senior Land Agent (Supv.)

Gerald Boles

FloodSAFE Environmental
Stewardship and Statewide
Resources Office
Environmental Program
Manager I (Supv.)

James Bondeson

Operations & Maintenance
Associate Hydroelectric Power
Utility Engineer

George Bullard

Oroville Field Division
Business Service Officer I

Sharon Donner

Engineering
Office Technician (Typing)

Lorinda Drysdale

Management Services
Associate Management Analyst

James Eckman

Flood Management
Senior Engineer

Joyce Gibson

Management Services
Associate Personnel Analyst

Mary Haney

Engineering
Staff Services Analyst

Stanley Hansson

Southern Field Division
Control System Technician II

Ray Hoover

Operations & Maintenance
Water & Power Dispatcher

Regena Ivory

Executive
Office Assistant (Typing)

Kurt Kovac

San Joaquin District
Senior Engineer

Chang Lee

Southern District
Senior Engineer

Charles Leni

Technology Services
Senior Information Systems
Analyst (Supv.)

Cecilia Masinas

Technology Services
Associate Information Systems
Analyst

Helen Mckinley-George

Fiscal Services
Accounting Officer

Robert Meyer

Southern Field Division
Hydroelectric Plant Electrician II

William Nickels

Environmental Services.
Supv. Chemist Test Sect.

William Nolan

California Energy Resources
Scheduling Division
Senior Hydroelectric Power Utility
Engineer

Michael Norris

FloodSAFE Environmental
Stewardship and Statewide
Resources Office
Engineer

Samuel Pack

Operations & Maintenance
Office Assistant (Typing)

Glen Pearson

Statewide Integr. Water Mgmt
Supervising Engineering Geologist

Darlene Quinn

Operations & Maintenance
Staff Services Analyst

Patricia Romero

Integ. Reg. Water Mgmt.
Office Assistant (Typing)

Anne Roth

Central District
Water Resources Technician II

Edward Schmit

Flood Management
Senior Engineer

Gerald Scoles

San Luis Field Division
Senior Hydroelectric Plant Operator

David Scott

Management Services
Printing Supervisor, SCIF

Dale Snider

Operations & Maintenance
Control System Technician III

Ronald Souza

San Luis Field Division
Assistant Utility Craftworker Supt.

Alden L Tubbs, Jr.

Southern Field Division
Hydroelectric Plant Mechanic I

David Tully

Engineering
Water Resources Engineering
Associate

Alma Vaughn

Fiscal Services
Accountant Trainee

Chung Yau

Operations & Maintenance
Senior Hydroelectric Power
Utility Engineer

Birth Announcements

Congratulations to DWR Parents:

George Medina, Staff Information Systems Analyst in the Division of Technology Service's Infrastructure Services Branch, has a daughter named Gabriella, who was born on June 5 weighing 7 pounds, 1 ounce and measuring 19 ½ inch long.

Lincoln King, Senior Engineer and Chief of the Turnouts and Special Projects Section in the State Water Project Analysis Office, has a daughter named Addison Elizabeth, who was born on May 5th weighing 7.2 pounds and measuring 20 inches long.

New Hires

Shah Adil

Engineering
Engineer

Eric Alvarez

Public Affairs Office
Information Officer I

Frank Anderson

Statewide Integrated Water Mgmt.
Land and Water Use Scientist

Richard Armstrong

Safety of Dams
Engineer

Abinet Asrate

Flood Management
Engineer

Ranbeer Aujla

Operations & Maintenance
Electrical Engineer

Jason Autrey

San Luis Field Division
Utility Craftsworker

Maninder Bahia

Environmental Services
Engineer

Jorge Barajas

State Water Project Analysis Office
Engineer

Ronald Bass

Executive
Associate Governmental Program
Analyst

Aseem Bhatia

Engineering
Electrical Engineer

Kora Bitcon

Management Services
Staff Services Manager I

David Bosworth

Central District
Environmental Scientist

Brian Braden

Oroville Field Division
Hydroelectric Plant Electrician I

Leann Bromley

Management Services
Senior Personnel Specialist

Katherine Brooks

Environmental Services.
Office Technician (Typing)

De Anne Campagna

Management Services
Office Assistant

Glendon Carson

Management Services
Data Processing Manager III

Karen Cawthon

Oroville Field Division
Office Technician (Typing)

Randall Cluck

Management Services
Business Service Officer I (Supv.)

Edward Conwell

Southern Field Division
Heavy Equipment Mechanic

Rachel Corbett

Operations & Maintenance
Associate Governmental
Program Analyst

Wanda Cox

Fiscal Services
Office Technician (Typing)

Rickey Damron

San Joaquin Field Division
Hydroelectric Plant Electrician I

Michelle Dooley

San Joaquin District
Engineering Geologist

Anne Ducey

Technology Services
Systems Software Specialist II

Michael Eason

San Joaquin Field Division
Building Maintenance Worker

Nathan Evenson

FloodSAFE Environmental
Stewardship and Statewide
Resources Office
Engineer

Ramoncito Firmeza

Fiscal Services
Accountant Trainee

Susan Fredell

Executive
Office Technician (Typing)

Heather Fuller

Environmental Services.
Environmental Scientist

Guynel Gagot

Management Services
Materials and Stores Specialist

Andres Garcia

Flood Management
Engineer

Joseph Garibaldi

Central District
Junior Engineering Technician

Gilead Ghiliamichael

Engineering
Mechanical Engineer

Patricia Gilbert

Flood Management
Environmental Scientist

Christian Gonzales

Operations & Maintenance
Electrical Engineer

Moises Gonzalez

California Energy Resources
Scheduling Division
Office Technician (Typing)

Mitchell Goode

Environmental Services.
Environmental Scientist

Lana Graber

Central District
Office Technician (Typing)

Chas Grant

Integ. Reg. Water Mgmt.
Office Technician (Typing)

Elena Hartsough

Engineering
Engineer

Emmalynn Harvey

Fiscal Services
Associate Accounting Analyst

Michael Healey

Fiscal Services
Office Technician (Typing)

Roberta Howe

San Joaquin District
Engineer

Michael Howell

San Joaquin Field Division
Building Maintenance Worker

Lisa Huff

San Luis Field Division
Office Assistant (Typing)

Jeffrey Ingles

Executive
Senior Management Auditor

Sanjeev Jha

Bay-Delta Office
Engineer

Merlinda Jimenez

Fiscal Services
Accountant Trainee

Bruce Kaminski

Executive
Staff Counsel III

Lucas Kaserich

Southern Field Division
Control System Technician II

New Hires

Ted Lambert

Operations & Maintenance
Staff Services Analyst

Roseann Langamon

Fiscal Services
Accounting Administrator I (Supv.)

Lori Lay

Fiscal Services
Accounting Administrator I

Vincent Ly

Bay-Delta Office
Assistant Information
Systems Analyst

Jacob Martinez

San Luis Field Division
Junior Engineering Technician

John Mcphaul Jr.

Technology Services
Systems Software Specialist II

Anthony Mireles

Southern District
Junior Engineering Technician

Ante Mlinarevic

Engineering
Engineering Geologist

Farshid Mojaver

Statewide Integrated Water Mgmt.
Research Program Specialist I
(Economics)

Constantino Montes De Oca

Southern Field Division
Utility Craftsworker

Hasan Morshed

Technology Services
Data Processing Manager III

Colleen Mosca

Management Services
Staff Services Analyst

Cassandra Musto

Flood Management
Landscape Architect

Martha Navarrete

Fiscal Services
Accounting Officer

Hoang Nguyen

Management Services
Staff Services Analyst

Phong Nguyen

Fiscal Services
Accountant Trainee

Deeann Ogas

Engineering
Office Technician (Typing)

John Paasch

Flood Management
Engineer

Alma Perez

Engineering
Right of Way Agent

Huu Pham

Environmental Services.
Staff Services Analyst

Melanie Powers

Flood Management
Environmental Scientist

Thom Pryor

Management Services
Senior Information Systems
Analyst (Supv.)

Rachel Pungan

Engineering
Office Technician (Typing)

Austin Roundtree

Safety of Dams
Engineer

Mary Rowe

Operations & Maintenance
Associate Governmental
Program Analyst

Prabhjot Sandhu

Bay-Delta Office
Senior Engineer

Tina Schaffer

California Energy Resources
Scheduling Division
Staff Services Manager I

Bruce Shaffer

Flood Management
Engineer

Durell Simmons

Management Services
Staff Services Analyst

Sukhdev Singh

State Water Project Analysis Office
Electrical Engineer

Gina Skurka Darin

Environmental Services.
Environmental Scientist

Patricia Small

Bay-Delta Office
Office Technician (Typing)

Tony Small

Engineering
Right of Way Agent

Kenneth Smith

Oroville Field Division
Hydroelectric Plant Electrician I

Gerald Snow

Statewide Integr. Water Mgmt
Environmental Scientist

Christy Spector

Statewide Integr. Water Mgmt
Environmental Scientist

Janice Sutherland

Environmental Services.
Staff Information Systems Analyst

Steve Thomas

San Joaquin Field Division
Hydroelectric Plant Electrician I

Jeffrey Tkach

Environmental Services
Environmental Scientist

Ming-Yen Tu

Bay-Delta Office
Engineer

Arthur Valencia

Engineering
Construction Supv. I

James Varney

California Energy Resources
Scheduling Division
Senior Hydroelectric Power
Utility Engineer

William Vogler

Safety of Dams
Engineer

Julie Weirton

California Energy Resources
Scheduling Division
Associate Governmental
Program Analyst

Gil Wong

Engineering
Construction Supv. I

Wayne Wong

Operations & Maintenance
Electrical Engineer

Michael Woodard

San Joaquin Field Division
Hydroelectric Plant Electrician I

Marvin Woods

Safety of Dams
Senior Engineering Geologist

Darrell York

Engineering
Office Technician (Typing)

David Zachary

San Joaquin Field Division
Utility Craftsworker

Annie Zhang

State Water Project Analysis Office
Research Analyst II

Promotions

Russell Allenbaugh
Operations & Maintenance
Associate Control Engineer

Ghassan Alqaser
Executive
Senior Hydroelectric Power
Utility Engineer

Julie Barber
Management Services
Personnel Specialist

Gary Bardini
Flood Management
C.E.A.

Saied Batmanghilich
Environmental Services
Senior Engineer

Tom Beiler
Management Services
Staff Services Manager II
(Managerial)

David Brown
Southern Field Division
Assistant Utility Craftworker Supt.

Deanna Butler
Oroville Field Division
Business Service Assistant

Everett Carter
Delta Field Division
Hydroelectric Plant Mechanic I

Teresa Clausen
Management Services
Staff Information Systems Analyst

Fabricio Cordero
State Water Project Analysis Office
Associate Hydroelectric Power
Utility Engineer

Valerie Cox
California Energy Resources
Scheduling Division
Staff Services Analyst

Zachary Cunningham
Public Affairs Office
Office Technician (Typing)

Eleanor De Anda
Fiscal Services
Accounting Administrator I

Mark De Cell
Management Services
Associate Governmental Program
Analyst

Sam De Sarno
Engineering
Senior Electrical Engineer

Carol Di Giorgio
Environmental Services.
Senior Environmental Scientist

John Diefenthal
Safety of Dams
Senior Engineer

Brent Dills
Management Services
Staff Services Manager II
(Managerial)

Varda Disho
Flood Management
Senior Engineer

Wendi Dodgin
Management Services
Staff Services Manager II
(Managerial)

Bonnie Duecker
Southern Field Division
Water Services Supervisor

Carla Elder
Fiscal Services
Senior Accounting Officer

Clifford Feldheim
Executive
Staff Environmental Scientist

Cheryl Fong-Ohara
Management Services
Personnel Specialist

Robert Frisk
Management Services
Office Technician (Typing)

Terri Gaines
Environmental Services
Recreation and Wildlife Resources
Advisor

Myra Galvez
Management Services
Staff Services Manager II
(Managerial)

Noelle Gentilli
Executive
Senior Legal Analyst

Crisanta Gonzalez
Management Services
Training Officer I

Delia Grijalva
Engineering
Associate Land Agent

Kamyar Guivetchi
Statewide Integr. Water Mgmt
C.E.A.

Steven Haggard
San Luis Field Division
Utility Craftworker

Arthur Hinojosa
Flood Management
Principal Engineer

Scott Jercich
Executive
Principal Hydroelectric Power
Utility Engineer

David Kearney
Management Services
Staff Services Manager III

Stephanie King
California Energy Resources
Scheduling Division
Associate Governmental Program
Analyst

Kenneth Kwong
Fiscal Services
Accounting Administrator I

Alfred Lam
Engineering
Engineer

Donna Lane-Mills
Management Services
Staff Services Manager I

Della Leong
Engineering
Senior Engineer

Latrice Leslie
Management Services
Staff Services Manager I

Rene Luna
Delta Field Division
Hydroelectric Plant Electrician I

Don Manglona
Southern Field Division
Control System Technician II

Leonard Marino
Executive
Principal Engineer

Jennifer Marr
Statewide Integr. Water Mgmt
Senior Engineer

Michael Martinez
Management Services
Personnel Specialist

Sandra Maxwell
FloodSAFE Environmental
Stewardship and Statewide
Resources Office
Senior Engineer

Promotions

Daniel McManus

Northern District
Supervising Engineering Geologist

Lisa Melton

Oroville Field Division
Warehouse Worker

Anthony Meyers

Engineering
Supervising Construction Engineer

Omar Moheyeldin

Technology Services
Systems Software Specialist III
(Supv.)

Brian Moniz

Southern District
Senior Engineer

Asm Golam Mostafa

Operations & Maintenance
Associate Hydroelectric Power
Utility Engineer

Matthew Mulligan

Central District
Engineer

John Murray

San Joaquin Field Division
Utility Craftsworker

Douglas Myatt

Fiscal Services
Staff Services Manager II
(Managerial)

James Newby

San Luis Field Division
Utility Craftsworker Supervisor

Darlene Nichols

San Joaquin Field Division
Utility Craftsworker

Michael Parreira

Delta Field Division
Health and Safety Officer

Shawna Pawlaczyk

State Water Project Analysis Office
Research Analyst II Econ.

Lorraine Pendlebury

Executive
Associate Governmental
Program Analyst

Alina Post

Management Services
Associate Governmental Program
Analyst

Andrew Quinto

Southern Field Division
Hydroelectric Plant Electrician II

Henry Rick Ramirez

Executive
Chief of Utility Operations

Joel Richard

Engineering
Senior Mechanical Engineer

Russell Rivas

Southern Field Division
Control System Technician II

Michelle Rivera

Management Services
Personnel Specialist

John Salinas

Delta Field Division
Hydroelectric Plant Electrician I

Raymond Sanchez

Executive
Associate Governmental Program
Analyst

Jeanette Sandoval

Management Services
Personnel Technician II

Patricia Schroeder

Fiscal Services
Associate Governmental Program
Analyst

Edna Smith

State Water Project Analysis Office
Research Analyst II Econ.

Behzad Soltanzadeh

Operations & Maintenance
Principal Hydroelectric Power
Utility Engineer

Michelle Starke

Technology Services
Senior Information Systems
Analyst

Kelly Staton

Northern District
Senior Engineering Geologist

Derek Stewart

Operations & Maintenance
Senior Hydroelectric Power Utility
Engineer

Anicia Sullera

Fiscal Services
Accounting Officer

Sharon Tapia

Safety of Dams
Principal Engineer

Joseph Tapia

San Joaquin District
Senior Engineer

Karen Tolentino

Flood Management
Junior Engineering Technician

Won Trinh

Engineering
Electrical Engineer

Surinder Tumber

Engineering
Associate Land Agent

Steven Turner

San Luis Field Division
Utility Craftsworker

Stephanie Varrelman

Executive
Staff Services Manager I

M. Elizabeth Ware

Management Services
Staff Services Manager I

Deanna Wilkes

Management Services
Personnel Specialist

Tammy Williamson

Northern District
Associate Information Systems
Analyst

Wendy Wood

San Luis Field Division
Water Resources Engineering
Associate (Supv.)

Garland Young

Southern Field Division
Chief Hydroelectric Plant Operator

Kent Zenobia

Flood Management
Senior Engineer

Obituaries

John Beavers

John Beavers, retired Mechanical Construction Supervisor I, passed away on May 23 at his home in Kelseyville.

John was a veteran of World War II. He took part in the invasion of Europe, landing in France on Utah Beach on June 6, 1944. He was wounded, captured by German forces, and spent 89 days as a POW in a French hospital before being liberated.

During his 24 years with DWR, John worked in Bakersfield, Castaic, and Oroville. In 1974, John began with DWR as a Hydroelectric Plant Mechanic at Southern Field Division. Three years later, he was promoted to Hydroelectric Plant Mechanic II. In 1979, he transferred to the Division of Engineering as a Mechanical Construction Inspector and was promoted to

Mechanical Construction Supervisor I in 1980. He spent nearly three years in Japan as plant inspector for several contracts. He worked on several major construction projects, such as Montezuma Slough Control structure and Bottlerock and South Geysers Powerplants. After his retirement in 1987, he returned as a Retired Annuitant from 1989 to 2000.

John spent his retirement years traveling to several foreign countries, fishing, hunting geese in Canada and South Dakota and wild hogs on the central coast of California.

He is survived by his daughter Mary Alex and two grandsons of Santa Rosa. ■

Leo F. Cournoyer

Leo F. Cournoyer, a DWR engineer in the 1960s and 1970s, died at his home in Roseville on June 26, 2009, at age 72.

Cournoyer spent his entire DWR career in the Operations and Maintenance Division. His assignments included working on water supply issues for the State Water Project. An expert on computers, Cournoyer helped improve and refine water supply forecasting for that era's deliveries, according to retired Deputy Director **Larry Mullnix**.

In 1974, Cournoyer left DWR and joined the Santa Clara Valley Water District as a senior Civil Engineer. He subsequently became the district's Water Supply Manager.

Upon retiring in 1995, he moved to Sun City Roseville. In retirement, he volunteered for the Sun City Roseville Security Patrol and also delivered Meals on Wheels.

A graduate of Worcester Polytechnic Institute in Massachusetts, with a Civil Engineering major, he moved

to California in 1959. He first joined DWR as a Junior Civil Engineer in 1959. In November that year, he went on military leave for active duty service in the U.S. Army, returning to DWR in June, 1960. After his military service, he earned a Masters degree in Civil Engineering from California State University, Sacramento. He was promoted to Assistant Civil Engineer in 1962 and to Associate Engineer in 1964.

Cournoyer was born in Massachusetts in 1936.

Survivors include his wife, Lorraine of Roseville, daughters Michele Parmley of Bakersfield and Lisa Roberts of Danville, two granddaughters, and a brother, Donald of Southbridge, MA. Memorial Mass was offered at Saints Peter and Paul Catholic Church in Rocklin on June 30. Remembrances may be made to the Alzheimer's Association, 530 Bercut Drive, Suite A, Sacramento, CA 95811. ■

Jack Wulff

Jack Wulff, retired Supervising Engineer and nationally known dam designer, passed away at the age of 80 on July 24 after a long battle with heart disease.

Jack, a native of Sacramento and 40-year resident of Walnut Creek, graduated from Sacramento High School in 1946. He earned his Bachelor of Science degree in Civil Engineering from the University of Nevada, Reno. He later spent 18 months as an Officer in the U.S. Air Force.

In 1950, he joined DWR as first Chief of Earth Dams Design. He was directly in charge of the designs for most major dams of the State Water Project, including Oroville Dam, the tallest

and one of the largest dams in the United States. During his 18 years with DWR, he also worked on the dam design of Bidwell Canyon, Bethany, Parish Camp, Abbey Bridge, Del Valle, Castaic, Cedar Springs, Thermalito Forebay, Thermalito Afterbay, Pyramid, Grizzly Valley, and Perris.

Jack entered private practice in 1968 as Principal Engineer for Design and Construction with Leeds, Hill, and Jewett in San Francisco. After joining Wahler Associates in Palo Alto and Walnut Creek in 1971, he became Chief Engineer, then later Vice-President and President.

Jack is survived by his wife, Jane and two sons ■

Obituaries

Richard R. Kuphaldt



Richard Kuphaldt, a retired Supervising Power Operations & Maintenance Engineer, passed away at the age of 78 in Roseville on July 10, 2009.

During his more than 25 years with DWR, Kuphaldt helped construct SWP control systems. He joined DWR's Division of Engineering as a Senior Control System Engineer for the Construction Office's Electronics Branch, where he supervised the construction of the California Aqueduct control systems.

In 1981, he transferred to Operations and Maintenance as Chief of the Control Systems Maintenance Section, which provided control system support for all field divisions.

In 1990, Richard moved to Southern Field Division as Supervising Power Operations & Maintenance Engineer. He worked on the East Branch Enlargement project. Richard supervised the Engineering Branch that played a vital role in startup testing and the initial operation of new pumping and generating units at Pearblossom Pumping Plant and Devil Canyon Powerplant. Richard retired in 1993.

"Rich was a very thorough gentleman," said **Surjit Bajaj**, who worked for Kuphaldt in the 1990s and now is the Supervising Hydroelectric Power Utility Engineer for Southern Field Division.

Richard earned a Bachelor of Science degree in Engineering from the University of California, Berkeley, and a Masters degree in Public Administration from California State University, Sacramento. He enjoyed fishing and camping.

Richard is survived by his devoted wife of 57 years, JoAnn, 10 children, 26 grandchildren, and one great-grandchild. ■

Robin Reynolds



Robin Reynolds, retired Deputy Director and the first Chief of the Division of Operations and Maintenance, passed away at the age of 88 on July 5 in Sacramento.

Robin, who was raised in Boise, Idaho, attended Boise High School. While attending the University of Washington, he joined the U.S.

Army Air Corps. He served nearly four years in the Army Air Forces as a Weather Officer, then graduated with a Bachelor of Science degree in Physical Science from the University of Chicago. He also earned a Master of Science in Civil Engineering from the University of California, Berkeley in 1948. He was a Life Member of the American Society of Civil Engineers.

During his 30 years with DWR, Robin worked on the planning, financing, constructing and operation of the State Water Project. He worked on Bulletins 1, 2, and 3. He also worked on land use data in water districts, Placer County investigation, in policy and program office preparing contracts to repay bonds, negotiations with the U.S. Bureau of Reclamation to build Sisk Dam and San Luis Reservoir, continued ongoing negotiations with the U.S. Corps of Engineers on flood control projects, working with State Water Resources Control Board to

secure water rights for the State Water Project, and helping develop the Burns-Porter Act.

Reynolds, who joined the Division of Water Resources in 1948 as an assistant civil engineer, worked as Chief of the Aqueduct Planning Unit, Central District and as the first Chief of the Division of Operations and Maintenance in 1961 before becoming Deputy Director in 1975.

As former DWR Director **Ron Robie** noted about Reynolds in his retirement article for DWR NEWS magazine, "We will all miss his tremendous technical competence and management skills. But most of all, we will miss his quiet and friendly manner."

During his last years with DWR, he provided advice and project review to the United Nations for water resources projects in India, Greece, Yugoslavia, Austria, and Kenya.

After his DWR retirement in 1978, Robin worked for the World Bank for 17 years on water projects all over the world. He worked on large projects in Pakistan, several in India and in Bangladesh as well as projects in China, Nepal and Indonesia.

In his final years, he resided at River's Edge Retirement Community.

Robin was preceded in death by his wife of 54 years, Jackie Calhoun Reynolds. He is survived by two children, one granddaughter, and two great-grandchildren. Donations may be made to St. John's Shelter Program for Women and Children, 2443 Fair Oaks Blvd. #369, Sacramento 95825. ■

Obituaries

Joe Jones



Joe Alan Jones (a.k.a. Pink Panther, Joe Cool), a Water Resources Engineering Associate Supervisor at San Luis Field Division's Coalinga Operations and Maintenance Subcenter, passed away at the age of 58 on July 8, 2009.

Joe's service to the Department began in 1968 as a summer youth aid. In 1970, he was drafted into the U.S. Army and was a Radio Teletype Operator. He returned to the Department in 1972, where his career progressed to his current position.

He supervised a water operations crew along the California Aqueduct. He managed the operation and maintenance that consisted of over 200 revenue meters in addition to supervising the remote and on-site operations of all water control structures. In 2003, he received a Unit Citation in recognition and appreciation

of his diligent attention and efforts to establish and maintain a safe working environment. His ardent desire to save dogs abandoned along the aqueduct was second to none. The proof still exist with "man's best friend", Joe's, "Sugar Bear".

His crew composed the following tribute to Joe:

"His passion was music as he was an avid guitar player and he also loved riding his Harley. He would write poems when employees were retiring or an incident happen that would cause the need for one to be written. This became a tradition.

He roasted everyone with his quick wit and poisonous pen. He could find humor in anything with underlying truth in his comments. This would help everyone rise above a difficult situation which helped morale.

Those that had the pleasure of knowing him loved him and looked forward to being around him. He has left a huge void in our lives that only he could fill. 'We miss you, our shining star'."

He is survived by his wife, Debbie, his son, Kevin, two stepsons, Dee and Larry, two grandsons, Gregory and Domo, and his brother, Jimmy. ■

Richard Lewy



Richard Lewy, Engineering Geologist in the Southern Region Office, passed away at age 55 on Friday, August 14, 2009.

In 1987, Richard started his career with DWR as a Student Assistant in the San Joaquin District (South Central Region office), then he joined Southern District

(Southern Region office) in 1990. Richard worked on many groundwater basin assessments and water quality studies in his nearly 20 years with the Southern Region office.

Richard volunteered to work on many flood campaigns and traveled to Arboga and Santa Clarita to help in flood emergencies. He was awarded Unit Citations for his work on well completion reports and with the Bulletin 118-2003 effort. Richard was

active in his union, where he served as a Delegate in the Los Angeles Section of Professional Engineers in California Government.

"Richard was also dedicated to his family and to supporting the rank and file worker," said **Timothy Ross** of Southern Region Office. "We will miss his vibrant personality and special marinated tri-tip which flavored our annual picnics."

Richard, who was born in Los Angeles and raised in Bakersfield, graduated from Bakersfield High School and California State University, Bakersfield.

Richard is survived by his wife of 26 years, Susanna, three sons, and a daughter. Memorial gifts can be made to his alma mater, the CSU Bakersfield Geology Department. Checks should be made payable to the CSUB Foundation with "In Memory of Richard Lewy" in the memo and mail to University Advancement 19AW, CSUB 9001 Stockdale Hwy, Bakersfield California 93311. ■

Obituaries

Price Schreiner



Price Schreiner, retired Water Resources Engineering Associate from the Division of Planning, passed away at the age of 74 on July 8, 2009.

During his nearly 40-year career, Price focused on estimating future water supplies for the Central Valley, which became the basis for many projects critical to the Department and the State, including the Coordinated Operating Agreement, establishing water quality standards through State Water Resources Control Board Bay-Delta hearings, and most importantly, planning studies of the Central Valley Project (CVP) and State Water Project (SWP) reservoir systems.

Price cultivated a deep understanding of the complex water resources system, and provided practical solutions to many

problems. Price commanded respect among his peers both inside and outside the Department, and his dedication was recognized with several awards.

"I was very fortunate to have worked with Price," said **Tariq Kadir** of the Bay-Delta Office. "I was his supervisor, but he was my teacher when it came to understanding Central Valley hydrology. To me, Price was a pillar of the Department. He was dedicated and served so well. He was also a true gentleman. I could say it no better than a consultant colleague who had worked with Price since the late 1960's commenting on his passing away: Price really was the bottom line on many California hydrology water issues. The buck stopped with him."

After his retirement from the Hydrology and Operations Section in DPA's Modeling Support Branch in 1994, Price worked as a Retired Annuitant until 2008. He provided invaluable advice and assistance to enhancing the hydrology for modeling the CVP-SWP systems.

He is survived by his brother, Ken Schreiner. ■

Susan Jo Wilson-Broadus



Susan Jo Wilson-Broadus, Senior Engineer in the Division of Engineering, passed away at age 53 on July 25, 2009 in Sacramento.

In 1986, Susan started her career at the Central District Office.

"Her talent, hard work, and dedication to each project reflected well on the Department. We were

fortunate to have known and worked with Susan," said **Karl Winkler**, her first DWR supervisor.

She left DWR in 1989 to pursue career opportunities as District Hydraulics Engineer for Caltrans in Redding, Director of Public Works for the City of Central Point, Oregon, Director of Public Works/City Engineer of Ashland, Oregon, and owner of Aqua Engineering.

In 2007, she was recruited by her colleagues to return to DWR and was reinstated with DWR in the Delta Suisun Marsh Office (DSMO) of the Division of Flood Management.

"Susan was known to stick to her strong principles with great determination," said **Dave Lawson**, her supervisor at DSMO. "One of her favorite projects was the Bethel Island 'Horseshoe

Bend' levee repair proposed for funding from the U.S. Army Corps of Engineers. She was instrumental in helping to steer it toward a cost-effective, environmental alternative."

In March of 2009, Susan was promoted to Senior Engineer in the Division of Engineering. Susan worked as a Delta Specialist. She used her expertise and knowledge of habitat restoration to advance several conservation opportunities for the Delta Habitat Conservation and Conveyance Project.

"Susan was a 'dream teamer' (her nickname for a trio of colleagues). She was sincere and forthright and lived true to her ideals as a dedicated vegan and advocate for the environment," said **Amy Simpson**, a colleague at DSMO.

Susan, who was born in Kokomo, Indiana, graduated from California Polytechnic Institute with a Bachelor of Science degree in Civil and Agricultural Engineering. She was a Professional Civil Engineer licensed in Michigan, California, and Oregon. She established and operated Agua Engineering, a private firm dedicated to protecting the environment. Susan, who was also fluent in Spanish, spent many hours teaching migrant children.

Susan is survived by her husband, Thomas of 30 years, her mother, and three siblings. ■

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STATE OF CALIFORNIA • DEPARTMENT OF WATER RESOURCES

DWR Mission | *Statement*

To manage the water resources of California
in cooperation with other agencies, to benefit
the State's people, and to protect, restore, and
enhance the natural and human environments.